CHAPTER 12

PUBLIC HEALTH

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The health status in the target areas has risen with the adoption of a national policy of Primary Health Care (PHC), but there are still some aspects falling below the national average. Most of the common diseases related to habits and behaviors of the people are difficult to address in the short term. It is necessary to strengthen control of these diseases before significant increases in morbidity and mortality set in. Health issues of school children should also be a focus of concern.

12.1 Current Situation of the Study Area

The promotion of the national policy of Primary Health Care (PHC) has resulted in significant positive gains in the health status not only in NBR but in the whole country as well, although there are still some aspects requiring some attention. The marked improvement in the health status of Thailand has been quoted as one the most successful cases of development of PHC in developing countries1. Access to safe water and sanitary facilities by the people in the target areas are almost totally assured by the same policy. However, non-communicable diseases have been increasing, and most them are rooted in the individual lifestyles of the patients.

12.1.1 Health Status

(1) Health Structure

In Thailand, the health status of the people has been significantly improved over the past 20 years. The average life expectancy at birth was extended from 58 years in 1970 and 69 years in 1997[2]. The infant mortality rates (IMR) per 1,000 live births were reduced from 74[3] in 1970 to 7.2[4] in 1997. Infant Mortality Rates (IMR) per 1,000 live

[1] The reasons for the success are analyzed in section 3 of this chapter
[2] UNDP, Human Development Report 1999.
[3] UNDP, Human Development Report 1999.
[4] UNDP Human Development Report for Thailand (1999). It is important to note that figures for IMR and

births and Maternal Mortality Rates (MMR) per 100,000 live births in the target areas are listed in Table 12.1[5]. The IMR was 8.27 in Mukdahan, 13.1 in Nakhon Phanom, 4.0 in Sakon Nakhon, and 8.57 in Kalasin. The MMR was 53 in Mukdahan, 7.0 in Sakon Nakhon, and 18 in Kalasin.

Table 12.1 Infant Mortality Rates and Maternal Mortality Rates in NBR

	Infant Mortality (/1,000)	Maternal Mortality (/100,000)
Whole Country	7.2 ***	16.7***
Mukdahan	8.27*	53.0*
Nakhon Phanom	13.1***	N/A
Sakon Nakhon	4. 0	7.0***
Kalasin	8.57**	18.0**

Source: Mukdahan Health Dept., Kalasin Health Dept., UNDP Human Development Report for Thailand (1999), please refer Footnote No. 5.

Note: *=1999, **=1998, ***=1997

The national average of IMR and MMR were 7.2 (1997) and 16.7 (1997)[6]. Therefore, only Sakon Nakhon had an IMR (4.0) and an MMR (7.0) that were better than the national average.

The health structure, which was known as disease structure in the past, of all four of the target provinces (refer to Tables 12.2, 12.3 and 12.4) is a mixture of non-communicable chronic and communicable diseases. It indicates that the health structure of the provinces is not a typical one for developing countries whose structure consists mainly of communicable diseases including cholera and other diarrhoeal diseases, malaria, etc. Such diseases as malaria, tuberculosis[7] and intestinal parasitic diseases are not significantly common in NBR any more.

The health structure of NBR contains diseases that usually occur in developed countries. Particularly, this is clear among the common causes of deaths in the NBR, which include heart diseases, neoplasm, diabetes, hypertension and cerebrovascular diseases. Therefore, the health structure of NBR can be placed in a middle category between that of developed countries and developing countries.

At the primary level of health facilities, the main causes of illness were digestive diseases, respiratory diseases, endocrine, nutritional and metabolic diseases, and

MMR, which had been taken or formulated from the national data of the UNDP Human Development Report for Thailand, were lower than those from other data books such as the ones from UNICEF or UNDP (international). For example, IMR in 1997 from the UNDP Human Development Report was 7.9, but in UNICEF, it was 31.

[5] Data for Mukdahan and Kalasin are taken from the Annual Reports of the health departments of the two provinces. Date for Nakhon Phanom and IMR for Sakon Nakhon are from UNDP Human Development Report for Thailand (1999). Data for MMR for Sakon Nakhon was not available.

[6] UNDP Human Development Report for Thailand (1999).

[7] There have been fluctuations in the annual incidences of tuberculosis in the target area. Increases were attributed to new cases of AIDS patients.

musculoskeletal diseases. The latter two groups are more common among people over forty years of age. The main causes of illness of the population in the municipalities were non-communicable diseases, such as hypertension and diabetes.

The reason for a higher ratio of digestive diseases, as explained by a provincial health officer during a survey, was people's eating habits, such as indulging in very spicy foods and bamboo shoots and irregular eating habits. Another common disease pointed out was peptic ulcer. Among the endocrine, nutritional and metabolic diseases many people suffer from was diabetes. The reason given for this was the increasing calorie intake of the people due to the improvement of their economic condition and as a result, their eating habits and lifestyles changed. But it is also highly possible that there could be other causes, such as eugenic factors.

Heavy manual labor in agricultural activities caused musculoskeletal diseases among farmers in the target areas. Another cause of this disease pointed out was lack of exercise among the older population.

In the target areas, there are also cases of parasitic diseases. A significant case of this kind is "liver fluke" disease, which is caused by clonorchiosis. One contracts this parasitic disease by eating raw or under-cooked freshwater fish, which is a native eating style. Fish caught in the fresh waters of the NBR is often infested with clonorchiosis.

Table 12.2 Common Causes of Diseases of Out-patients in 1998

	Mukdahan	Nakhon Phanom	Sakon Nakhon	Kalasin
1	Respiratory System	Respiratory System	Respiratory System	Respiratory System
2	Digestive System	Digestive System	Digestive System	Digestive System
3	Clinical Abnormalities	Musculoskeletal System	Musculoskeletal System	Musculoskeletal System
4	Musculoskeletal System	Skin Diseases	Endocrine, Nutrition & Metabolism	Communicable & Parasite Diseases
5	Endocrine, Nutrition & Metabolism	Communicable & Parasitic Diseases	Communicable & Parasitic Diseases	Endocrine, Nutrition & Metabolism
6	Communicable & Parasitic Diseases	Other External Cause	N/A	Clinical Abnormalities
7	Skin Diseases	Blood Circulation	N/A	Skin Diseases
8	Other Causes	Endocrine, Nutrition & Metabolism	N/A	Injury
9	Blood Circulation	Genitourinary System	N/A	Blood Circulation
10	Genitourinary System	Eye Diseases	N/A	Genitourinary System

Source: Health Departments of Mukdahan, Kalasin, and Sakon Nakhon

Note: Data for Nakhon Phanom is not available. Each province used different approaches in grouping of diseases.

Table 12.3 Common Causes of Diseases of In-patients in 1998

	Mukdahan	Nakhon Phanom	Sakon Nakhon	Kalasin
1	Clinical Abnormalities	Intestinal Infection	Clinical Abnormalities	Intestinal Infection
2	Spontaneous Single Delivery	Upper Respiratory Infection	Intestinal Infection	Clinical Abnormalities
3	Indirect Obstetric Abnormalities	Pneumonia	Communicable & Parasitic Diseases	Upper Respiratory Infection
4	Intestinal Infection	Digestive System	Traffic Accident	Peptic Ulcer
5	Respiratory System	Communicable & Parasitic Diseases	Upper Respiratory Infection	Communicable & Parasitic Diseases
6	Accidents	Accidents	N/A	Diabetes
7	Pneumonia	Gastrointestinal Ulcer	N/A	Pneumonia
8	Diabetes	Genitourinary System	N/A	Respiratory System
9	0ther Causes	Diabetes	N/A	Urinary System
10	Peptic Ulcer	Lower Respiratory Infection	N/A	Digestive System

Source: Health Departments of Mukdahan, Kalasin, and Sakon Nakhon

Note: Data for Nakhon Phanom is not available. Each province used different approaches in grouping of diseases.

Table 12.4 Common Causes of Deaths in 1998

	Mukdahan	Nakhon Phanom	Sakon Nakhon	Kalasin
1	Decrepitude	Heart Disease	Malignant neoplasm, all forms	Neoplasm
2	Heart Disease	Malignant neoplasm, all forms	Heart Diseases	Heart Disease/Failure
3	Neoplasm	Accidents & Poisoning	Accidents & Poisoning	Respiratory System
4	Unidentified Cause	Liver & pancreas diseases	Liver & pancreas diseases	Diabetes
5	Traffic Accident	Nephritis, Nephritic syndrome and Nephrosis	Nephritis, Nephritic syndrome and Nephrosis	Infection in Blood Circulation
6	High Fever by Unidentified Cause	Respiratory System Other than the Upper Respiratory Tract	Hypertension & cerebrovascular disease	Kidney Diseases
7	Immune Deficiency	Suicide, homicide & other injury	Suicide, homicide & other injury	meningitis
8	Respiratory System	Hypertension & cerebrovascular disease	Pneumonia & other lung diseases	Paralysis
9	Kidney Diseases	Diabetes mellitus	Paralysis, all types	Allergy
10	Diabetes	Paralysis, all types	Tuberculosis, all forms	Liver Fluke

Source: Health Departments of Mukdahan, Kalasin, and Sakon Nakhon

Note: Each province used different approaches in grouping diseases.

Data collection of the health status of children in schools has not been sufficient in NBR, so that their health status cannot be reviewed in a detailed manner. A review can be made only for limited issue-areas. This indicates that policies and activities for child health and school health have not been developed adequately, a situation partly derived from the past. In the Thai PHC system, issues of child health have been dealt with almost within the framework of mother and child health. As a result, focus on the child health care was mainly on infants and young children. It is said that children in schools have health problems to be solved by increased efforts of the health sector.

(2) Situation of HIV/AIDS and its Care

People living with HIV/AIDS (PLWHA) who cannot afford the expensive medical care for the disease in the target areas receive only limited health services[8]. Care for the

[8] There is a sort of limitation on medicines provided to PLWHA. It can be said that, theoretically, PLWHA can obtain expensive medicine since they are given financial support by different ministries, together with a card, which entitles them to free medical care. But receiving the insurance or the care would jeopardize the privacy of the patient, and this has kept the patients from utilizing these mechanisms.

AIDS patients is being carried out mainly by their families. However, information about HIV/AIDS does not sufficiently reach both the patients and their families[9]. In addition, this lack of information about HIV/AIDS has caused prejudice and fear about the disease. In turn, difficulties have emerged for PLWHA including access to medical care in the community.

HIV Infections have not spread in the target areas greatly, compared to the national median rates; however, indications are that the trend is on the rise among the clients of sex workers and their families (refer to Table 12.5). This is plausible since the infection rate of pregnant women with HIV in Sakon Nakhon increased from 0.89% in 1997 to 1.31% in 1998.

Table 12.5 Latest Data on HIV Surveillance for the Target Areas (1997)

	Mukudahan	Nakhon Panom	Sakon Nakhon	Kalasin	Major Urban Areas	Outside Major Urban Areas
Pregnant Women	0.27	0.8	0.89	0.72	1.28	1.71
Sex Workers	N/A	N/A	N/A	33.33	13.02	25.81
STI* Patients	0	7.69	7.02	5.56	6.79	6.67
Blood Donors	0.26	0.59	0.51	0.25	N/A	N/A

Source: UNAIDS, "Epidemiological Fact Sheet Thailand 2000 Update"

Note: Data for Major Urban Areas and Outside Major Urban Areas are median rates. Data for Injecting Drug Users are not available in the target area.
STI*=sexually transmitted infections

12.1.2 Service Provision and Administration

The structure of health service provision is well developed from the primary to tertiary levels. The access of the people to primary health care, which is often problematic in many developing countries, is highly assured. However, the scale at the tertiary level and the population covered by health personnel among the target provinces varies. In Kalasin, one doctor and one registered nurse cover a larger population than the national average.

The Provincial Hospitals are at the provincial level, the District Hospitals at the district level, and the Health Centers at the Tambon (the administrative unit of villages) level (refer to Figure 12.1). The number of health facilities and their beds are shown in Table 12.6. In the four provinces in the target area, the size of the Provincial Hospital varies from 250 beds of Mukdahan Provincial Hospital to 539 beds of the Sakon Nakhon. But in addition to the Provincial Hospital, some of the provinces have other hospitals such as a military hospital in Sakon Nakhon. It should be noted that in Mukdahan, there is also a private hospital with 150 beds. At the health centers, mainly

[9] Due to the lack of information about the prevention of opportunistic infectious diseases, the AIDS patients die of diarrhea or other phenomena within a short time after being infected with these diseases.

health officers who ordinarily finish a two-year education course on public health after finishing high school or nurses provide services. At the Tambon level, the Drug Revolving Fund (DRF) is usually set up by the villagers in order to ensure the availability of basic drugs for their villages. A small amount of money is collected from each household to buy the drugs. These are kept and maintained in a Health Center or one of the villagers' houses[10]. When the villagers use them, they pay a slightly higher price than the wholesale price, and the price difference is used for the maintenance of the medicines.

Since the decentralization of the Thai government has been advanced, capacity building at the district level as well as the Tambon level is urgently needed.

In each village, there are Village Health Volunteers (VHVs). One VHV is in charge of ten households on average. For example, in Mukdahan and Kalasin there are 6,123 and 14,674 VHVs respectively. VHVs[11] provide very basic public health services such as distributing contraceptives and providing basic drugs. They are also required to promote sanitation and nutrition, provide information about public health[12], and encourage people to change their behaviors to more healthy ones, for example, encouraging mothers to have their babies immunized.

Table 12.6 Number of Health Facilities and Their Beds

	Mukdahan		Nakhon Phanom		Sakon Nakhon*		Kalasin	
<Public Facilities >								
	No.	No. of Beds	No.	No. of Beds	No.	No. of Beds	No.	No. of Beds
Provincial Hospital	1	250	1	557**	1	539	1	360
Specialized Service	N/A	-	1	120	N/A	-	N/A	-
District Hospital (No. of Districts)	6(7)	30x5, 10x1	11	See Note	16	90x2,60x4,30X7, 10x3	11(14)	90x2, 60x3, 30x8
Health Center (No. of Tambon/Villages)	73 (42/493)	N/A	148 (148)	N/A	153 (124/1,288)	N/A	157 (134/1,502)	including 1 municipal health center
Community Health Station	1	-	N/A	-	N/A	-	N/A	-
<Private Facilities >								
Hospital	1	150	83***		2*	95*	1	80
Clinic	19	-	-		N/A	-	31	-
Dental Clinic	4	-	-		N/A	-	6	-
Delivery Clinic	19	-	-		N/A	-	28	-

Note: 2*, 95*=data for 1995. 83***=total number of private hospitals and clinics.
Sakhon Nakhon*=has a military hospital with 90 beds. 557**=No. of beds for the provincial hospitals and district hospitals.

[10] Sometimes a house with DRF is regarded as a Village Health Post of which service provision is usually limited to the provision of drugs.

[11] When the Village Health Volunteer system was first introduced, there were no specific qualifications for VHVs, only that they want to become VHVs and that they can read and write. Most of the VHVs were women.

[12] The provision of information is sometimes assigned to the Village Health Communicators (VHCs). But the

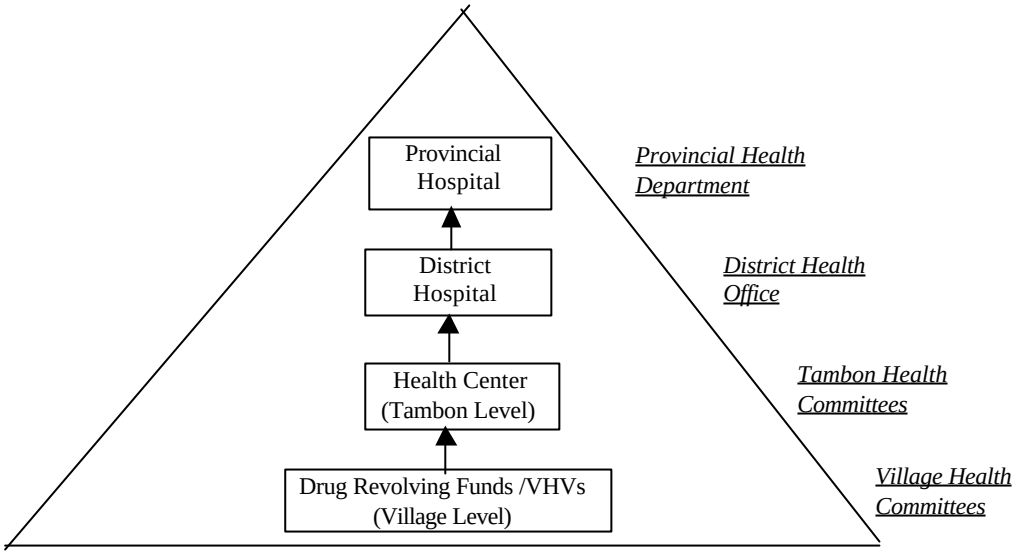

Figure 12.1 Basic Structure of Health Service Provision in the Target Area

Source: JICA PLANET

The Ministry of Public Health (MOPH) has set up a referral system starting from a lower level, Health Centers, up to a higher level, the Provincial Hospitals. In addition, according to the kind of public insurance scheme they carry, patients are required to go to a health facility at a specified level for their first contacts[13].

The referral line of the PHC has not been followed strictly in the target areas since people bypass levels of health facilities and seek more sophisticated treatment. This has resulted in extra costs and crowdedness at hospitals at the higher level and under-utilization of the lower level health facilities of the PHC system.

The number of health personnel and the population covered per health worker in the target areas are shown in Table 12.7. In Kalasin, the number of health personnel is not adequate for the scale of its population. The number of people covered by one doctor was 17,978, which is among the highest in all provinces. If it were compared with the data for 1995, it could be ranked at the seventh highest, i.e., the worst seven of all 76 provinces. The smallest number of people covered by one doctor was 6,870, and this was in Mukdahan. Among the four target areas, Kalasin had the highest number of people covered by one registered nurse, 4,400, or about 3.5 times that of Mukdahan. The health administration structure is shown in Figure 12.1.

work of VHCs is limited to it, so that this report mainly explains about VHVs.

[13] The patients under the Free Care scheme and the Health Insurance Card should visit the Health Centers at their first contact. The details of the health insurance scheme are explained in subsection 12.1.3 (Health Insurance and Finance).

Table 12.7 Number of Health Personnel and Number of People covered by one Health Worker

	Mukudahan	Nakhon Panom	Sakon Nakhon	Kalasin
<Number of Health Personnel>				
Doctors	48(3)*	56	84	55
Dentist	12	19	32	13
Registered Nurses	257	610	533	227
Technical Nurses	171	5	387	197
Health officer	216	N/A	523	379
Pharmacists	20	14	47	25
<Number of People Covered by One Health Personnel>				
Doctors	6,870	12,698	12,838	17,978
Registered Nurses	1,259	1,165	2,023	4,400
Health officer	1,526	N/A	2,062	2,608
Population	329,782	711,116	1,078,439	988,801

Source: Mukdahan Health Department, Kalasin Health Department, Thailand Statistics Data
Note: Data for Mukdahan, Kalasin and Sakon Nakhon are for 1999, and those for Nakhon Phanom are for 1998.
(3)*=number of doctors working in the private sector

In NBR, private hospitals and clinics have been opened mostly in municipalities. Mukdahan has the most developed private health facilities among the four target provinces: 19 clinics, 4 dental clinics, 19 delivery clinics and 1 hospital with 150 beds. Some relatively wealthy people tend to use these private facilities instead of the Mukdahan Provincial Hospital because their operation hours are longer and some have sophisticated medical equipment, among other reasons.

In the long term, the number of private health facilities will be enlarged, but their geographical coverage will not extend greatly into the rural areas. The reason for this is the unsatisfactory return on investment due to the lower income levels of these areas.

It is increasingly important to more clearly locate the private sector in the development plan of the health sector and make the private sector function appropriately to the development of the entire sector. Setting regulations on the coverage of their service and the fees they charge is urgently needed for the protection of patients. Drawing a demarcation between the public and the private sectors in terms of the level of service provision will be on the agenda in the near future.

12.1.3 Health Insurance and Finance

The coverage of health insurance is not satisfactory in the target areas[14]. In addition, cost recovery for the health service is severely limited because nearly half or more than half of the population is covered by the Free Care scheme under which medical care is free of charge. But because of budget limitations, the services provided under this scheme sometimes end up being of a low quality. The provincial health departments in the target areas desire to extend the coverage of a voluntary public health insurance scheme, the Health Insurance Card scheme (refer to Figure 12.2); however, the scheme has not become widespread. In addition to these issues, in the target areas, the increases in older population and incidents of chronic diseases would likely expand the health expenditure of the public sector. Decentralization of the GOT will make these issues of health more substantial to the local governments.

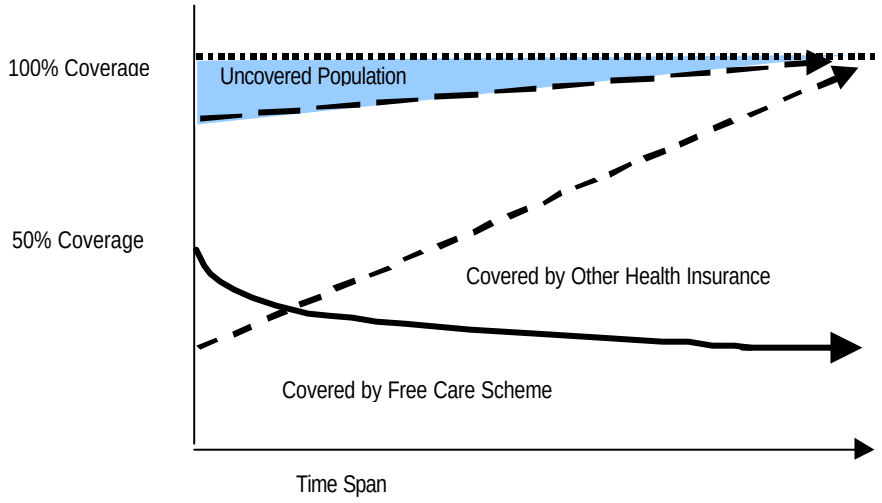

Figure 12.2 Concept of Future Change of Health Insurance Coverage

Source: JICA PLANET

Currently in Thailand, the public health insurance scheme is divided into four categories (refer to Table 12.8). The first is the health insurance for civil servants and workers of state enterprises. Their families are also covered by this insurance. The second is the compulsory health insurance of employees of certain categories of companies[15]. The third is the Health Insurance Card scheme. A Health Insurance Card costing 500 baht covers family members for a year. The fourth is the Free Care scheme[16]. In the target areas, the number of people working for the public sector and

[14] Detailed data for the four provinces is not available. In Kalasin, 23% of the total population was not covered by any health insurance scheme in 1999.
[15] This scheme is further divided into two sub-categories.
[16] The coverage of the Free Care scheme slightly differs among provinces, but basically, it covers the poor and unemployed, children 5 years and below, primary and secondary school students under 15 years old, the elderly over 60 years old, monks, etc. Very often VHVs are also covered. The income standard to be eligible for this scheme also differs among provinces.

for private companies is limited. Therefore, the issue of health insurance is centered on two schemes: the Health Insurance Card and Free Care.

Table 12.8 Health Insurance Schemes in Thailand

	Name	Covered Population	Types	Service Obtained	The health facility to be visited at first contact	Charge, Cost Sharing, Source of Fund
1	Civil Servant and State Enterprise Benefit Plan (managed by MOF*)	Civil servants, state enterprise workers, their spouse, parents and children	Public Employees Insurance	All outpatient services in public facilities, inpatient service in public and partially private Providers paid by fee-for-service Maternity benefits included	Free	Charges are set higher than th real cost of services by public hospitals. Fund comes from general tax.
2	Social Security Fund (managed by MOLW**)	Compulsory for Employees	Compulsory for firms with more than 20 workers	Non work-related Outpatients and inpatients services in public and private facilities Maternal benefits included	Contract	employers, employees and the government contribute 1.5% of the payroll respectively.
	Workmen Compensation Fund (managed by MOLW)			Work-related, maternity benefits not included Outpatients and inpatients services in public and private facilities Maternity benefit not included	Free	Only employers contribute the fund.
3	Health Cards(managed by MOPH)	One Health Card covers family members up to five	Voluntary, purchase 500bt per card, subsidized	Public facilities with strict referral No limitation on the frequency of use of health facilities.	Health Center(Referral Line)	70% of health card fund is designated to fund providers, the remaining costs of providers are subsidized by
4	Free Care(managed by MOPH)	Elderly over 60 years The Poor/Unemployed People with Disabilities Children 0-5 years old Students in Primary and Secondary School under 15 years old Monks, War Veterans VHVs, etc.	Social welfare managed by MOPH	All services free of charge in the public sector providers paid by fee-for service	Health Center(Referral Line)	Each province, set own income standard for the eligibility of this fund. Fund comes from general tax revenue and is allocated to provinces. The allocated fund dose not cover the half of expenditure, rest are subsidized by the hospital's own budget.

In the target areas, although the data is not perfect, about 50% of the population belongs to the Free Care category. In 1999, 53% of the population of Kalasin and 47%[17] of Sakon Nakhon's was covered by the Free Care scheme. As a result, the cost recovery by user fees in the target areas was limited. Anecdotal evidences given by people covered by the Free Care scheme show that there is a shortage of medicines for the scheme at health facilities.

The GOT has been striving to promote the Health Insurance Card scheme under pressure of increases in the health budget. The target population of the Health Insurance Card scheme is the self-employed and farmers. The population of farmers

[17] This 47% does not include the number of VHVs who are supposed to be under the Free Care scheme.

is large in the target areas. However, in Sakon Nakhon, only 7,160 persons out of the total population of 516,912 were covered by the scheme in 1999. It was 186,574 out of 988,801 in Kalasin. In Mukdahan, the target number of card-purchases was 12,000, but only 9,923 cards were sold. From this figure, the total number of people covered was estimated to be 10% to 18% of the total population of the province.

In the future, the number of elderly people in the target areas, who are covered by the Free Care scheme, is expected to increase, and this will raise the health expenditure of the public sector. In addition, chronic diseases are becoming increasingly common among the people in the target areas, and this will also have an impact on the health expenditure.

The Provincial Hospitals and even some of the District Hospitals introduced a differentiated service scheme. They specially upgraded in-patient rooms, called VIP Rooms, for patients who are willing to pay a special rate. These rooms have become so popular that the ordinary in-patient beds in such hospitals have become under-utilized. It goes to show that people who can afford it would be willing to pay an extra charge for better service. This implies possibilities for increasing revenues of hospitals by introducing differentiated service.

12.1.4 Cooperation with the Laotian Provinces across the Mekong River

Nakhon Phanom and Mukdahan have official agreements on emergency care for outbreaks of communicable diseases with the Laotian provinces on the other side of the Mekong River. Additionally, Laotians use official public health services, usually for free. The financial burden of their use on the provincial health sector has not been studied in detail, but the Thai side has exhibited some concern.

Laotians living in the areas close to the borders with Thailand visit health facilities on the Thai side of the Mekong. There are two types of visit in terms of the level of services. Firstly, Laotians visit to seek public health and clinical services provided by the Health Centers and the District Hospitals, mostly, free of charge. Anecdotal evidences suggest that in the target areas these Laotians' relatives who are living on the Thai side of the Mekong inform them of the health services offered, for example, immunization day at the Health Centers, and the Laotians visit simply by crossing the river, by small boats. These services are not necessarily sophisticated (the cases in Mukdahan are shown in Table 12.9). Therefore, it is estimated that there are underlying reasons for these visits, although they have not been formally studied. Easier accessibility to the Thai health facilities or higher quality of their services might be among the reasons.

Table 12.9 Ten Most Prevalent Diseases of Laotian Out-patients

		98	99
1	Health Services*	1,010	863
2	Respiratory Diseases	840	784
3	Digestive Diseases	341	242
4	Infectious/Parasitic Diseases	176	130
5	Musculoskeletal	135	115
6	Nutrition, Metabolism, Endocrine	128	103
7	Blood Circulation	110	91
8	Clinically Unidentified	98	76
9	First Aid	90	80
10	Diarrhea	86	68

Note: Health Services* include free provision of condoms, vaccinations, check-ups of infants, etc.
Source: Mukdahan Health Department

Secondly, Laotians who are relatively wealthy visit to seek more sophisticated health services at the secondary and tertiary levels of health care, which are not available in Laos. Information gathered suggests that they pay some charge for the services. Some of them even visit private health facilities in Thailand. But other Laotians who need these sophisticated services but cannot afford them go to the Thai official health facilities and receive the services free of charge.

The ratios of the Laotian in-/out-patients to the total in-/out-patients of public health facilities in Mukdahan are not high, 1.01% and 0.47% respectively. So is the ratio of the total cost for these Laotian patients: 1.62% of the total expenditure of the health department of the province.[18] However, the total cost for the treatment of patients, as well as the total cost for the out-patients, shows an upward trend.

12.2 Past Development Policy, Program and Its Achievement

12.2.1 Improvement of the Health Status of the People by PHC

The national promotion policy of PHC was started during the Fourth Development Plan (1975 - 1980) of the government of Thailand (GOT). Other than the PHC development policy, special policies were implemented only for ethnic minorities in the northern and southern areas of the country and for the poor. But the policy for the poor was not area-wise. Therefore, no special health development policies for NBR have been promoted, and this was confirmed by MOPH.

The improvements in the health status of Thai people, as stated in section 12.1, have been realized by the government PHC policies and people's efforts over the past

[18] The total expenditure of the Health Department in 1999 was 96,231,197.10 baht, according to the annual statistics report of the province.

twenty some years. The achievement is known worldwide and is often quoted as a model for other developing countries. Trainees from other countries have been sent to Thailand to learn from this successful experience.

The following four factors are regarded as having contributed to the success of PHC in the country. Cause-effect relationships among them and activities, which were largely influenced by them, are illustrated in Figure 12.2.

(1) Integrated Approach

In order to achieve the PHC goals, the GOT applied an inter-sectorial approach, i.e., an integrated approach from the beginning of the PHC system; the Ministry of Public Health cooperated with the Ministry of the Interior, the Ministry of Education, and the Ministry of Agriculture. Thus, the development of the PHC system has been conceived as one of the important plans for socio-economic development of the country by these relevant ministries.

This integrated approach has been reflected in various aspects of activities of the PHC such as training and project designing. The training on PHC targeted not only officials of the MOPH but also those of the Ministry of Agriculture and of the Ministry of Interior. In addition, these health officials have been trained to take the inter-sector approach.

This integrated approach established a firm foundation for the development of the health sector and made the development sustainable. If levels of development of agriculture and industry are low, it is extremely difficult to raise the health status and to make the development of the health sector sustainable.

(2) Participatory Approach

People's participation was strongly promoted. Theoretically, people's participation is regarded as the foundation of PHC, but in reality the participation is difficult to realize at an adequate level. Many attempts elsewhere in the world also applied a system of VHVs, but have ended up in only mobilizing people and facing weak support from the people to PHC, including their low utilization of the PHC system. But in the case of Thailand, promotion of the participation has been successful because of the following approaches.

1) Encouraging the Self-management of PHC by the Local Community

The MOPH delegated the authority for managing the PHC system to the local level. This automatically required a more responsible involvement of local officials and the community leaders in the planning, monitoring, evaluation, and so forth. The Village Health Committees and the Tambon Health Committees were set up for this

self-management purpose and they consisted of village chiefs, VHVs, and community health officials mainly.

2) Mobilizing Local Financial Resources

The GOT generously allocated financial resource for the health sector in the process of development of PHC, but still was not able to respond to all its needs. The shortage of finance was mitigated by local financial resources which were contributed by well-minded people aspiring to realize better health for the people in their community. The involvement of community leaders in PHC development worked as a promoting factor for this. Local financial resources, such as profits from the DRF, premiums saving of the Health Insurance Card, or donations from villagers, have been used for the construction, repair, and improvement of the health facilities in the villages.

3) Making the Content and Target of the Programs More Acceptable to Village People

Clear and achievable targets have been set for the programs, since community leaders were involved in decision making. Because of this, villagers were able to accept them as the targets they had to pursue and made efforts toward their achievement.

4) Assuring the Quality of Work by the VHVs

The capacity of VHVs had been strengthened by various training at first. Then, the quality of work by the VHVs was assured by the supervision of trained health workers. Health workers held regular meetings with VHVs and also visited the villages to supervise VHVs. Whenever they visit the villages, health workers look for health issues of the villagers. These workers have experience in active outreach work. The self-check lists for VHVs developed by the MOPH also contributed to the assurance of quality of work by VHVs.

5) Involving Existing Women's Groups

Existing women's groups were trained on issues of PHC such as sanitation, clean kitchens, etc. Women were very often concerned with these issues so that they quickly adopted what they had learned in the training to daily life.

The training was particularly effective in advancing the installation of household water jars and household latrines which were essential for prevention of diarrhoeal diseases and improvement of sanitation.

(3) Active Management of Information

Information on health status and issues were actively shared among officials, health staff, VHVs, village leaders and villagers, since these people were not regarded as the subject of health service provision by the GOT but as the main actor in the PHC development. The MOPH utilized the media to disseminate information on the PHC development. The information sharing was instrumental in raising the commitment of the people, and media campaigns created a favorable climate for PHC promotion.

1) Sharing Information with Villagers

Because of the integrated approach of the PHC development, data about health status, economy and agriculture in the villages were collected by the VHVs. This has contributed to both officials' and villagers' identifying health and development needs of villages, and the planning of activities of PHC. This data collection has been evolved into an integrated participatory rural research over the years.

2) Realizing Exchange of Information among the VHVs and Village Leaders of Different Villages

Mechanisms for exchange of information and experience about PHC among VHVs and village leaders and between villages worked very well. They were encouraged to visit other villages, which were successful in promoting PHC, and study tours and workshops for this purpose were organized by initiatives of the MOPH. Through these activities, experiences were shared, and useful tips were exchanged.

3) Media Campaigns

Media campaigns about health issues concerning PHC by the MOPH have created encouraging circumstances for the promotion of the PHC system for the VHVs and the officials at different levels of health offices and facilities.

(4) Actual Budgeting and Implementation

Based on the secured budget for the PHC development, planned health service provision and activities were realized, and health infrastructure was developed step by step. The budget allocation for the training of the VHVs was also assured at a satisfactory level. Also, the actual service provisions according to the information provided by the VHVs made people confident about VHVs and support for the PHC system. The construction of health facilities, latrines, and so forth resulted in the people changing their habits and behaviors for a more healthful living. Some of them have been constructed through various contributions from the local people.

(5) Others

Effective organizational and academic, as well as technical support, from the ASEAN Training Center for Primary Health Care at Mahidol University and the Northeastern Regional Training Center for PHC have been provided to the PHC development by the MOPH.

The nature of agrarian Thai society, in which the people with the same kinship live closely, both physically and emotionally, with their life centered on collective rice production, brings about mutual caring and support among people. The nature of this system serves as a foundation for the PHC system.

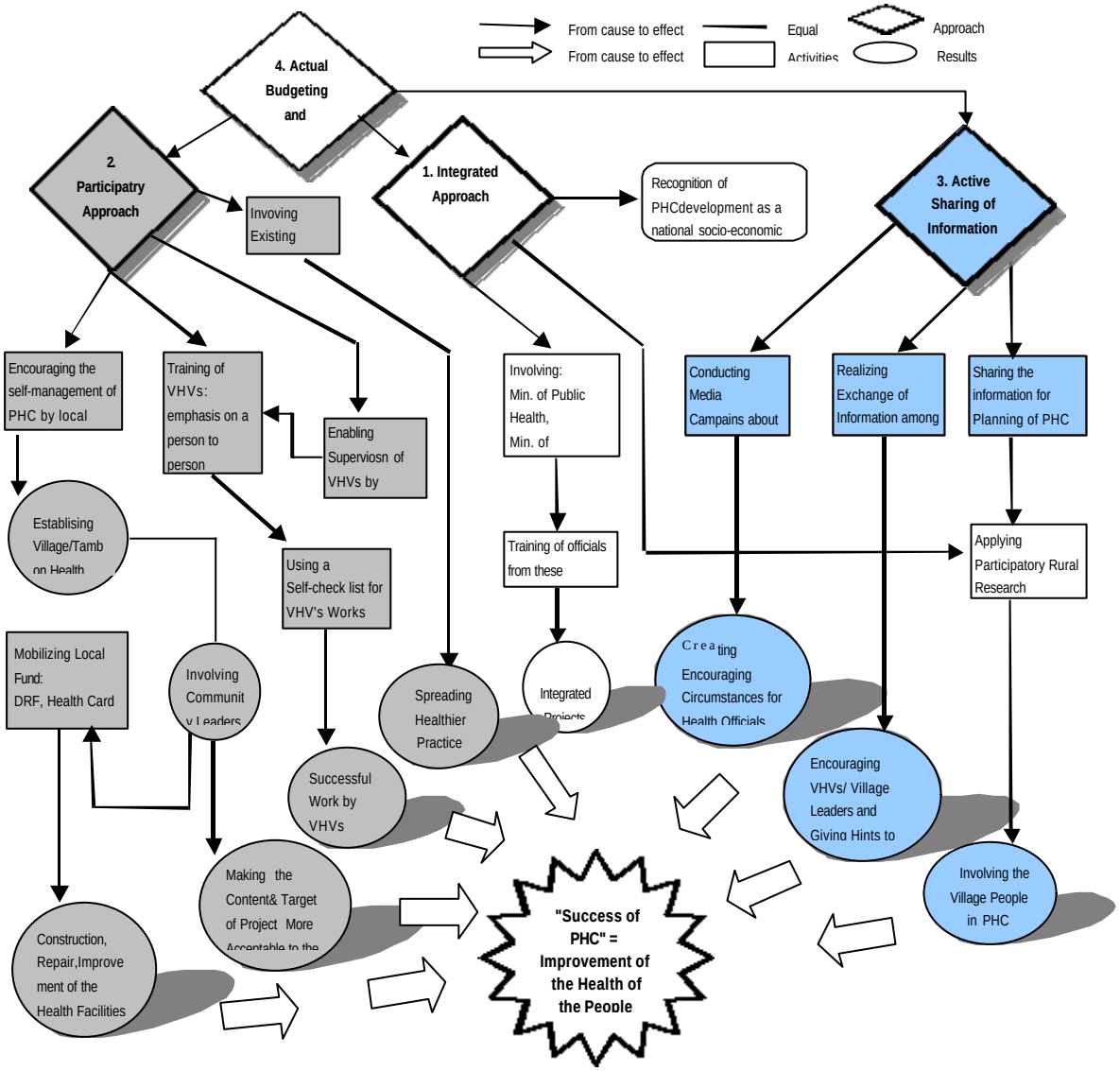

Figure 12.3 Success of PHC

Source: JICA Study Team

12.3 Current and Future Development Policy

After years of economic growth which resulted in rapid socio-economic changes in the Thai society, many of which are positive but with a very few negative ones, GOT adopted a new development paradigm—"Integrated Human Centered Development"—in the 8th National Economic and Social Development Plan (1997-2001). In this paradigm human resources are regarded as the main factor in determining success of development. Economic development is not ranked as the ultimate goal for development, but one of the factors that can provide happiness and better quality of life for the people.

In this new paradigm, health is regarded as a key-determining factor of human resource development on one hand. But on the other hand, as stated above, health issues have also changed in many aspects according to the socio-economic changes, and have increased their complexities. The Health Development Plan under the 8th National Economic and Social Development Plan has reflected the paradigm change and the changes of the socio-economic aspects and health issues themselves. As stated above, MOPH did not take any region-specific health development policies.

However, the economic crisis in 1997, which resulted in decreases of government's inputs for the health sector and caused a certain level[19] of setbacks in the improvement of health status of the people, definitely enhanced the complexities and added difficulties for finding solutions to health issues. Therefore, reviewing the implications of the current Health Development Plan, which had been formulated before the economic crisis, about a year before the term of the plan ends does not hold any great significance.

The feature of the current Health Development Plan differs largely from the previous Health Development Plans, which focused on health facility development, service quality improvement, and measures for movement of health personnel to the private sector. Keywords of the current Health Development Plan are "knowledge, attitude and behavior about health," "health insurance," "consumer goods and health industry."

Retrospectively, the relevance among the objectives, targets and strategies should have been examined, for instance, with regard to improvement of working and living environments and realization of a healthful life for the elderly. Another example is the setting of target indicators about non-communicable diseases, such as cancer and cardiovascular diseases, without having highly relevant clear strategies for these but broad tactics. Table 12.10 indicates the objectives and indicators. Table 12.11 indicates the strategies.

[19] Detailed studies about the negative impact on the health sector development by the economic crisis in 1997 have not been published yet.

Table 12.10 Objectives and Indicators of the Health Development ('97-01)

Objectives	Areas
To enhance people's knowledge and to encourage them to have a right attitude and good behavior	Knowledge & Attitude
To decrease mortality and morbidity due to these diseases.	Diseases caused by high-risk behavior and disease-prevention
To ensure that the people have health insurance and access to integrated health services with good quality.	Coverage of Health Insurance
To protect consumers by setting standard of quality of health-related products and enabling them to be knowledgeable about such products.	Consumer goods
To ensure a good, pleasant and safe living and working environment for the people.	Environment
To support community organizations to take care of the health of their members	Community -groups' Participation
To enable family members to be healthier, particularly pregnant women and children.	Health of family members, particularly mother and child
To support the elderly to be healthy and living with dignity.	Health and life of the elderly
To enable all Thais to be capable of making use of native health-related wisdom and to become leaders of health development at the regional level.	Native health-related wisdom
Items of Targets (only those for the Health Impact and the Accessibility are written with the indicators)	Areas
IMR = 12 per 1,000 live births, MMR = 20 per l00,000 live births, life expectancy at birth for females = 72.20 years, for males = 67.91 years.	Health Impacts
Cases of malnutrition, rates of new HIV infection, morbidity and mortality of certain diseases, cancer, cardiovascular diseases and other diseases, etc.	Reduction of health burdens
Increasing accessibility to health services from 70% to 100%. Increase 25% of health facilities to support the under-privileged group	For the underprivileged*
Improving people's access to health services: Bed: Population=1:50, Doctors: Population= 1:3,300, Dentists: Population=1:9,800, Pharmacists: Population=1:5,200, Registered nurses: Population=1: 900 Improvement of quality of services of all health facilities Universal coverage by health insurance	Accessibility to health services
Enabling local administration capable in managing health problems: 50% of municipalities, 25% of sub-municipalities, and 20% of Tambon administration Offices.	For self-reliance and participation of the people

Note: Items for JICA PLANET Study Team set "Areas".
Source: Ministry of Health

Table 12.11 Strategies of the Health Development ('97-01)

Strategies and Main Tactics	Areas
Reforming the administrative and managerial processes of national health development (Decentralizing authorities, reforming health care financing, streamlining regulations, promoting networks among all parties concerned)	Administrative and managerial process at national level
Increasing efficiency and accessibility of health service (Improving quality of government health services and further involvement of NGOs, supporting traditional/indigenous medicine, accelerating the universal coverage of health insurance system)	Health Service including indigenous medicine and health insurance
Encouraging favorable health behaviors for disease prevention and health promotion (Developing effective technologies and innovative approaches, improving environment to ensure safe living and working conditions for the people, promoting workers' health by requiring safety standard, etc.)	Knowledge & Attitude, Diseases caused by high-risk behavior and preventive diseases, Environment, Human Resource Development
Developing a system for consumer protection in health-related services and products. (Ensuring quality, safety and reasonable pricing of consumer products, establishing an autonomous agency for quality assurance of public hospitals, promoting the private sector's participation in consumer protection.)	Consumer Goods
Strengthening programs on human resource development for the health sector Mobilizing resources for human resource development for the health sector, reorienting human resource development system, developing mechanism for promoting career development.)	Human Resource Development
Promoting and encouraging effective behavioral changes for health. (Conducting intensive health campaigns, allocating budget to communities to ensure their participation, developing the people's potential in self-care)	Behavioral Change
Promoting studies, research and development of health-related products and technologies. (Increasing capability of manufacturing modern and traditional medicines, promoting research and development of health products, revising laws and regulation for promotion of health industry, promoting participation of consumers and manufacturers	Research and Development, traditional (indigenous) medicine, Promotion of health industry, Raising quality of health products.

Note: "The underprivileged*" include children with difficulties, children and women in the sex industry and who are victims of violence, people with disabilities, the elderly without relatives or caretakers, the poor, those on probation, detainees, and prisoners.
Source: Ministry of Health

12.4 Future Trends and Constraints

This was already mentioned in this chapter, but the health structure of NBR is changing from a typical one for developing countries to one for developed countries. NCDs (non-communicable diseases) will be more common among the people. The impact of NCDs, both physically and economically, will grow in NBR. This trend will continue due to changes in the eating habits and exercise patterns of the people, which are brought about by economic development as well as social changes.

Increasing information inflows from outside have been enlarging consumerism, which work both negatively and positively for health. When it works negatively, destruction of good habits may occur, such as increased intake of foods containing higher cholesterol and calories.

Changes in values from traditional to new which are caused by the information inflows are likely to give negative influence on communities ties, which have been the foundation of PHC development, and on the continual improvement of health status of the people.

Stagnant population growth rates for the future are expected as a result of lower birth rates and more migrant labor, of which permanent emigration is likely to increase further. This, in turn, will realize a population structure with less number of younger populations and more number of older populations than the present one, if other conditions are the same. This will enlarge the health expenditure in the area.

With the information inflow20, it is highly possible that society will be induced to high-risk behaviors such as drug abuse and unsafe sex in commercial or casual sex. This has happened in developing countries in Africa and Latin America. Some of the youth from NBR would be particularly vulnerable to such behaviors, while finishing their school years in their early teens and having opportunities to work in bigger cities while being separated from their parents and communities. Therefore, measures are needed to protect and promote the children's health while they are still in school.

12.5 Planning Issues of the Study Area

12.5.1 Improving Health of Children in Primary Schools

Although children in primary schools belong to a vulnerable group in the society, the main focus of the past primary health care development of the country has been put on infants and younger children, not on them. In other words, past primary health care

[20] The information flows here exclude information flow intended for health education.

developments in Thailand did not focus on children in primary schools strongly. Partly because of this, detailed and comprehensive statistics about their health status is not available in the country.

Rapid social changes in the 1990's have exposed children to higher levels of health risks. Their intake of artificial foods or foods containing additives have increased, and some of them have been experiencing temporary/seasonal separation from their parents when their parents go to bigger cities for work.

However, these children will be important actors in promoting development of Thailand in the future, so that their health status should be improved. This was emphasized by the fact that the population growth rates of the country have been decreasing. The younger generations are smaller in number but should be healthier in physical and mental aspects.

12.5.2 Preventing Non-Communicable Diseases (NCDs) and Early Diagnosis

Generally, the disease structure of Thailand is not regarded any more as a typical one for developing countries, that is, consisting mainly of communicable diseases such as tuberculosis and parasitic diseases. Rather, it is regarded as being closer to a typical one for developed countries, that is, composed of non-communicable diseases (NCDs) such as heart diseases, diabetes, and cancers. The disease structure of NBR is in a transition period from the communicable-diseases-oriented one to the NCD-oriented one. These situations in regard to the whole country as well as NBR are shown in Figure 12.4.

The Y-axis indicates the 10 main causes of deaths in all Thailand and the X-axis indicates the mortality due to these diseases per 100,000 population in the country and the four provinces in NBR. According to Figure 12.4, "diseases of the circulatory system," which include heart diseases, were ranked as the largest cause of deaths in Thailand. They were also one of the main causes of deaths in NBR. The second cause, "external cause of morbidity and mortality, other accidents," was mainly attributed to injuries, often from traffic accidents in big cities like Bangkok. Therefore, this has not been highly ranked in NBR. "Neoplasm," which was the third largest cause of deaths in Thailand, was also one of the main causes of deaths in NBR.

The fourth, fifth and sixth main causes of deaths in Thailand, namely, "diseases of the respiratory system, "certain infections and parasitic diseases, and "diseases of the nervous system," respectively were not often counted as the main causes of deaths in NBR.

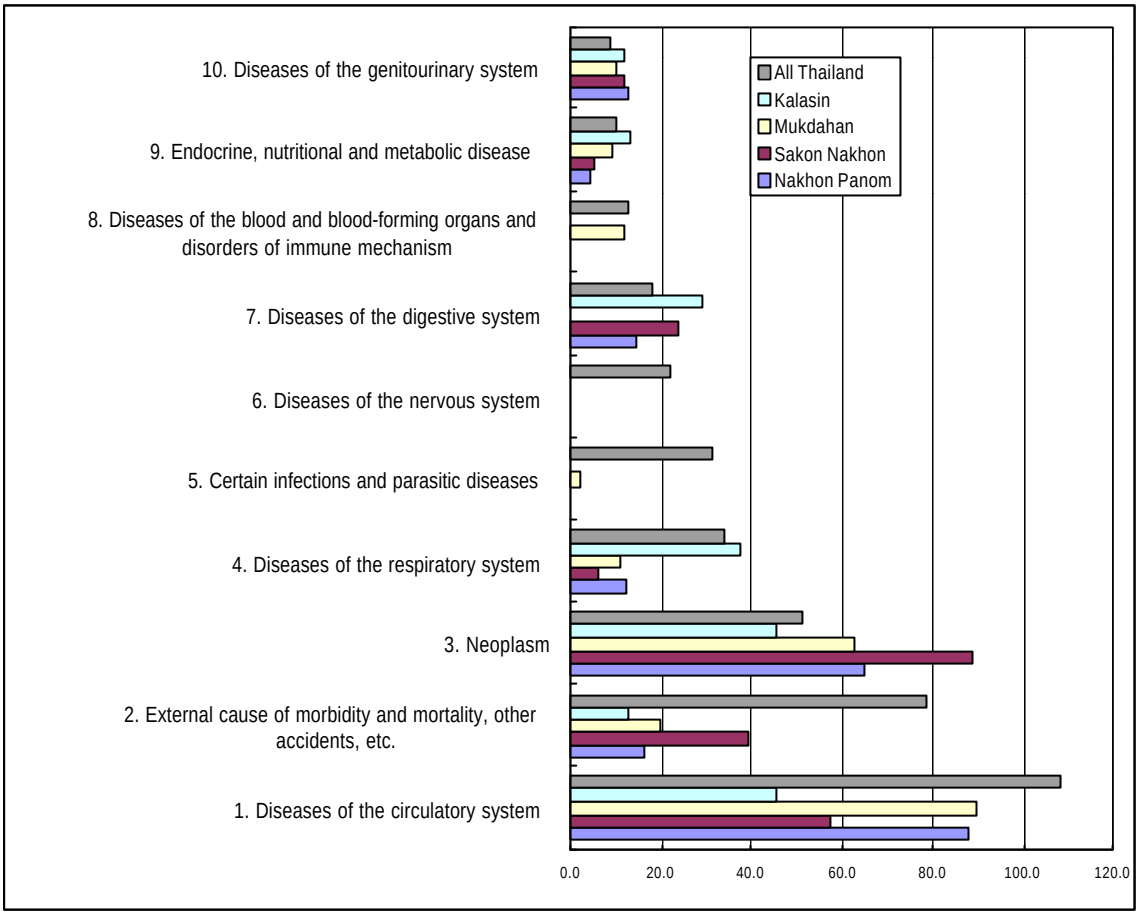

Figure 12.4 Comparison of Disease Structures between NBR and the Whole Country

Source: JICA PLANET

On the contrary, the seventh, "diseases of digestive system," the ninth, "endocrine, nutritional and metabolic diseases," and the tenth, "diseases of the genitourinary system" were also relatively common as causes of deaths in NBR. According to the health staff of NBR, diseases under these categories include peptic ulcers, diabetes, and nephritis.

NCDs are often chronic and cause disabilities that affect the quality of life of patients for a long time. In addition to these physical burdens on the patients, generally, care for NCDs requires long-term and expensive curative methods. Thus, a lot of cost is involved. Further, large financial burdens are laid on families, since most of the patients are adults and NCDs tend to disrupt their earning capacities.

Causes of NCDs are rooted in a person's lifestyle, for instance, eating habits and exercise. Therefore, an effective way for a person to avoid contracting NCDs is a change of lifestyle.

12.6 Development Strategies

12.6.1 Improving Health of Children in Primary Schools

The health status of children in primary schools can be improved through the following:

- Promoting health education and examination at schools. Schools can be used as a venue for collective health education and examination. Health education for school children proved to be effective for increasing knowledge and changing behaviors. Good health habits obtained in childhood have a high potential to last for a long time.
- Promoting health education at schools for parents of school children. Schools have advantages for health education because it would be relatively easy for them to involve the parents of school children and community members.
- Developing health education capacity at schools so that newly emerging health issues such as those of HIV/AIDS and drug abuse will be included as themes of health education.
- Assigning personnel who play functions of protection and promotion of health of the school children and provide fast aid and simple, limited care to every school.
- Establishing the "school doctor system" in which schools, health administrative offices and doctors in the community cooperate for the promotion of health of school children. This system aims at designating doctors to be responsible for controlling diseases and promoting the health of school children for a certain term in cooperation with health staff in the community.
- Strengthening collaborative relationships between the health and educational sectors for promotion of health status of school children.

12.6.2 Preventing NCDs and Early Diagnosis

NCDs can be prevented and diagnosed early by the following measures:

- (1) Expanding the coverage for screening among target population;
- (2) Providing health education on NCDs to the target group and encouraging them to change their styles of life; and
- (3) Strengthening capacity of screening and care of the health office and facilities.

12.7 Development Plan and Projects

12.7.1 Improving Health of Children in Primary Schools

(1) Promotion of Dental Health

1) Rationale

Children in NBR find it difficult to care for their dental health by themselves. The latest survey by MOPH indicated that the percentage of 6 year-old children who had dental decay increased from 57.4% in 1984 to 81.2% in 1994.

Main information relating to dental health of school children is shown in Table 12.12. Percentages of 12-year old children who had dental decay on their permanent teeth were 23.0% in Mukdahan, 38.7% in Nakhon Phanom, 35.2% in Sakon Nakhon, and 51.3% in Kalasin. Compared with the national average of 53.9%, these figures were better except that of Kalasin. But additional efforts should be made to decrease the percentages.

In NBR, the coverage of regular dental examination was higher than the national average in 1999, except that in Mukdahan province which had coverage 1 percent lower than the national average. However, it should be noted that due to the shortage of dentists, which will be explained later, these examinations have been conducted mostly by teachers or health officers, not by dentists. This means that the occasions of examination included dental check-ups and some simple dental treatments.

Fluoride treatments are internationally recognized as effective measures for prevention of dental decay. The coverage and method of the fluoride treatments differ within NBR (refer to Table 12.12). The coverage in Mukdahan was 13%, and the method used was fluoride tablets. It was 85.9% in Nakhon Phanom and this treatment was realized by a project called "Brush the Teeth after Lunch Project." Under this project, students are to brush their teeth using toothpaste with fluoride after lunch in school. But due to recent budgetary restraints, the students were encouraged to bring their own fluoride-added toothpaste.

In NBR, rates of implementation of the fluoride treatment seem to relate to morbidity due to dental decay of 12-year old children. Kalasin and Sakon Nakhon did not implement it, and the morbidity in Kalasin was highest and that in Sakon Nakhon was the second highest.

Among the four provinces, health education on dental health was not conducted in Nakhon Phanom and Sakon Nakhon in 1999, in spite of the fact that in Nakhon Phanom the project using toothpaste with fluoride was implemented. Although the

project was carried out in the other two provinces, Mukdahan and Kalasin, the coverage was not high, 66.7% and 45% respectively.

Table 12.12 Dental Health of School Children

(%)

	Children with Dental Decay (12 yrs. old)	Regular Checking 1999	Fluoride Treatment 1999 (6-14 yrs. old)	Health Education for Dental Health (6-14 yrs. old)
Whole Country	53.9(1994)	81.9	64.6*	95.9
Northeastern Region	45.3(1994)	N/A	N/A	N/A
Mukdahan	23.0(1994)	80.93	13**	66.7
Nakhon Phanom	38.7(1997)	94.3	85.9***	0
Sakon Nakhon	35.2(1997)	89.16	0	0
Kalasin	51.3(1997)	100	0	45

Note: 64.6*=fiuoride rinses, 13**=tablet, 85.9***=toothpaste with fluoride

Source: MOPH.

Provision of dental health care services is severely limited due to the shortage of dentists in the area[21]. The number of dentists in NBR is inadequate compared with the population level. For example, in 1995, one dentist covered 20,363 as a national average, but 44,726 in the Northeastern region, 45,377 in Mukdahan, 62,730 in Nakhon Phanom, 55,667 in Sakon Nakhon, and 80,030 in Kalasin. In 1999, the figures for NBR were 27,481, 37,427, 33,701 and 76,061, respectively. However, they are still far worse than even the national average for 1995 (refer to Table 12.13).

Table 12.13 Number of Dentists and Number of People Covered by One Dentist

	Whole Country	Northeastern Region	Mukdahan	Nakhon Phanom	Sakon Nakhon	Kalasin
No. of Dentists	2,920*	462*	12	19	32	13
No. of People Covered by One Dentist	20,363*	44,726*	27,481 (45,377*)	37,427 (62,730*)	33,701 (55,667*)	76,061 (80,030*)

Source: Alpha Research Co., Ltd., "Thailand Public Health 1999", Mukdahan Health Dept., Nakhon Phanom Health Dept., Sakon Nakhon Health Dept., and Kalasin Health Dept.

Note: *data for 1995

2) Objectives

Preventing dental decay, especially permanent teeth, in children in primary schools.

[21] The issue of shortage of dentists has been prevailing in the entire country except big cities like Bangkok and Cheng Mai.

Providing limited treatment for dental decay during dental examination in order to address the difficulties in accessing dental care, because of the shortage of dentists.

3) Indicators

Indicators for progress of the development are set as follows (refer to Table 12.14).

Table 12.14 Indicators in the Field of Dental Health of School Children

	2005	2010	2020
Children Under 14 Years Old Having Dental Decay (%)	35	25	15
Coverage by Regular Examination(%)	100	100	100
Coverage by Fluoride Treatment (%)	25	50	70
Coverage by Health Education on Dental Care (%)	40	60	100

4) Strategies

Utilizing primary schools as venues for regular examination, health education, and limited treatment of dental decay.

Promoting regular examination, health education and treatment for dental decay for children in primary schools.

Increasing access of the school children to regular examination and treatment by professional dentists by involving them in activities relating to dental health at primary schools.

5) Activities

Activities in the short-term for this project are as follows:

- To conduct regular dental check-ups at schools.
- To increase the involvement of professional dentists in activities relating to dental
- Health at primary schools.
- To make available limited treatment by dentists at schools free of charge or at lower cost, through occasions of regular examination at schools.
- To promote the fluoride treatment to prevent dental decay.
- To enhance health education on dental and oral health at the primary schools.

Activities in the long-term for this project are as follows:

- To conduct dental examination by professional dentists regularly.
- To ensure the access of school children to dental care free of charge or at lower

cost through the "school doctor system".

6) Issues for Implementation

The shortage of dentists will be a constraint, therefore, efforts to increase their number should be strengthened by national and local health authorities.

(2) Promotion of Healthful Growth and Improvement of Malnutrition

1) Rationale

Among primary school children, the percentages of underweight children in NBR in 1999 exceeded the national average as well as the average for the northeastern region. This implies that the weight-increases of the children are less adequate than the situations in the country and those in the northeastern region. An exception was the figure for Mukdahan—it was slightly lower than the northeastern region average.

The percentages of children falling below the height standard in NBR in the same year also exceeded the national average as well as the average for the northeastern region. This implies that the height-increases of the children are less adequate than the situations in the country and those in northeastern region. Once again, the figure for Mukdahan was lower than the national and the northeastern regional averages (refer to Table 12.15).

In addition, data for Sakon Nakhon indicated that percentages of primary school children afflicted with anemia were 17.7% in 1996, 16.8% in 1998, and 15.5% in 1998.

Table 12.15 Percentages of Children Falling Below Weight/Height Standard

	No. of students measured for their weight and height in 1999	% of students falling below the weight standard in 1999	% of students falling below the height standard in 1999
Whole Country	5,154,776	10.10	6.62
Northeastern Region	1,895,404	12.05	7.34
Mukdahan	28,576	10.31	3.89
Nakhon Phanom	66,625	12.71	11.46
Sakon Nakhon	108,214	14.81	12.24
Kalasin	94,002	11.90	11.61

Source: MOPH, *=UNDP, Human Development Report 1999.

Also, there is severe malnutrition among 5-year old children in NBR. The percentages of malnutrition in 1996 were 23.8% in Mukdahan, 28.1% in Nakhon Phanom, 11.7% in Sakon Nakhon, and 22.5% in Kalasin. This implies that children in

NBR continue to experience malnutrition from their neonatal to early adolescent term. The impact of malnutrition on their physical and mental development is immense. Also, the causes for malnutrition including poverty and eating habits are deep-rooted in the society.

In response to these situations, the provincial health departments in NBR have been providing milk as dietary supplement for children who have serious problems of growth or malnutrition. However, dramatic improvements on the physical health of these children cannot be expected by only this kind of measure at schools.

2) Objectives

Promoting healthy growth and improving malnutrition among children in primary schools.

3) Indicators

Indicators for progress of the development are set as follows (refer to Table 12.16).

Table 12.16 Growth Indicators in School Children

	2005	2010	2020
Students falling below the weight standard (%)	8	5	3
Students falling below the height standard (%)	7	5	3

4) Strategies

Involving their caretakers in the efforts for improving status of malnutrition as well as growth of children in primary schools.

Increasing the amount of information on nutrition held by children and their caretakers. For the caretakers, information on ways of changing patterns of intake to ones with better nutrition is emphasized.

Regularly checking the growth of children in primary schools and figuring out accurate levels of growth problems by using standard deviation.

Modifying the current dietary supplement program at schools to more effectively address the different types of nutrition issues including that pertaining to shortage of micronutrients.

5) Activities

Activities in the short-term for this project are as follows:

- To conduct regular check-ups on the growth and nutrition status of children at schools and collect more accurate and detailed data by using standard deviation on their weights and heights.
- To conduct heath education on nutrition for children and their caretakers at schools.
- To conduct studies to find out which local foods are nutritious and affordable for the poor families in NBR, and how to prepare and cook them the easy way without losing much of the nutrients.
- To provide information to caretakers on the affordable ways of changing the eating patterns of children to ones that are more suitable to a healthful growth.

Activities in the long-term for this project are as follows.

- To modify the current dietary supplement program at schools to more effectively address the different types of nutrition issues including that of shortage of micronutrients.
- To change the way of presenting data on children's growth to one that is more accurate and detailed based on the results of the short-term activities.
- To provide information to children and their caretakers at school about avoiding obesity. Individual consultations for over-weight children will be conducted.

6) Issues for Implementation

Poverty is the biggest cause of malnourished children in NBR, so that measures to reduce poverty should be implemented at the community level in parallel with these activities.

Because of this poverty, very limited financial resources for food expenditure are available for these children's families. Much effort is necessary to find out and take advantage of the locally available, affordable and nutritious food.

The involvement of caretakers requires teachers' initiatives, so that close collaborations with the education and health sectors are necessary.

12.7.2 Preventing NCDs and Early Diagnosis

(1) Expanding Prevention and Screening of Prevention of NCDs

1) Rationale

As responses for the emerging health impact by NCDs, programs have been implemented in NBR. For example, the health department of Mukdahan province has programs for diabetes, hypertension, breast cancer and cervical cancer. Their targets and activities are shown below (refer to Table 12.17). The health screening has been conducted on an individual basis, when a person belonging to any target group visited a health center or hospital for some reason.

Table 12.17 Targets and Activities of NCD Programs of Mukdahan Health Dept.

Target	Diabetes	Hypertension	Breast Cancer	Cervical Cancer
Mortality, Morbidity	N/A	Decreasing mortality due to cardiovascular diseases to 50/100,000	Decreasing mortality by 20%	Decreasing mortality and morbidity rates by 50%
Screening	Increasing the coverage of screening by 70% of the people over 40 years old	The same as the ones for breast cancer	Increasing the coverage of annual cancer examination by 10% of women who are over 40 years old	Increasing the coverage of Pap smears by 50% of women 35 to 54 years old
			Increasing the detection rates of breast cancer at the early stage to between 20% to 40% for 10 years	
Health Education	Having all people obtain knowledge about diabetes	Having all people obtain knowledge about blood pressure	Having all women over 20 years old obtain knowledge about breast cancer examination	
Activities	Diabetes	Hypertension	Breast Cancer	Cervical Cancer
Screening	Checking sugar level of urine. If the results are out of the normal range, repeat the procedure.	The same as the ones for diabetes	Checking women who are between 35 to 45 years old and with high risks	The same as the ones for breast cancer
			Providing consultation for women undergoing check-ups	The same as the ones for breast cancer
Health Education	Disseminating information about the diseases at village level through existing dissemination system	The same as the ones for diabetes	Disseminating information of free check-ups at health centers	The same as the ones for breast cancer
			Conducting education about breast cancer and the benefits of undergoing breast cancer check-ups	
			Raising awareness of people on protection of health	
			Including patients in the activities for raising social awareness	

Source: Mukdahan Health Dept.

In order to strengthen capacity of implementing these programs, the activities of Mukdahan Health Department include improving management of information and diagnosis and treatment aspects, such as:

- Establishing and utilizing an effective surveillance system and keeping data on cases of NCDs,
- Collecting reports on morbidity and mortality of NCDs and getting a good grasp of the situation about the diseases,
- Extending support to health centers and hospitals in regard to issues of medical equipment used for cancers,
- Strengthening the laboratory capacity of Mukdahan Provincial Hospital for cancer detection and treatment.

Since the health sector of the country is highly centralized and provincial health departments strictly follow the central policy, three provinces other than Mukdahan in NBR must have similar programs.

The outcomes of these programs have not been satisfactory. The coverage target of urine examination and blood pressure measurement were set at 70%; however, the outcomes of three provinces other than Nakhon Phanom were significantly low (refer to Table 12.18). The average coverage in the three provinces was 25.3% for urine examination and 30.8% for blood pressure measurement.

Thus, it could be said that the coverage was low, but the morbidity figured out from the screening was high (refer to Table 12.18). This means that there have been a large number of people who have suffered health problems in relation to diabetes and hypertension but do not know exactly what caused them.

Table 12.18 Coverage of Screening of Main NCDs and Their Morbidity and Mortality

	Urine Examination for Diabetes (%)	Morbidity for Diabetes per 100,000	Blood Pressure Measurement (%)	Morbidity for Hypertension per 100,000
Targets set for Whole County	70	Not more than 50 (8th Health Sector Plan)	70	N/A
Nakhon Phanom	62.8	890.2	70.77	288.2
Kalasin	35.3	1,923.6	31.2	456.0
Sakon Nakhon	18.75*	366.8	35.63*	767.2
Mukdahan	21.68	N/A	25.8	N/A

Source: Nakhon Phanom Health Dept., Kalasin Health Dept., Sakon Nakhon Health Dept., Mukdahan Health Dept.
Note*=Coverage among the people who are more than 35 years old.

The only available outcome of programs for screening of breast cancer and cervical cancer was Kalasin's—17.6% for the coverage of breast cancer screening and 17.33% for cervical cancer in 1999. Both were very low compared with the targets.

Currently, regular annual health screenings have been conducted only for government officials, free of charge. Items for the health screening for government officials are listed in the table below (refer to Table 12.19). They cover basic items in a physical check-up, and the cost per person (for a female) is from 400 Bt. to 600Bt.

Therefore, health screening has not covered office and factory workers, farmers, and self-employed people. Particularly, those workers working at towns are vulnerable, since factories in Thailand are under the jurisdiction of the Ministry of Interior, which is not keen on introducing collective health screening for factory workers.

Table 12.19 Standard Items of Health Screening for Government Officials in Kalasin

Chest X-ray	Routine Urine Examination
CBC	Routine Stool Examination
Blood Grouping (ABO type)	Pap smear (females only)
Blood Chemistry (Blood Sugar, Cholesterol, etc.)	Breast Exam (females only)

Source: Health Dept. of Kalasin

(2) Objectives

- To prevent NCDs among the target groups.
- To expand coverage of NCDs in order to diagnose NCDs at the early stage of development.
- To conduct health education for NCDs for the target populations and encourage them to change their styles of life to more healthful ones.

(3) Indicators

Indicators for progress of the development are set as follows (refer to Table 12.20):

Table 12.20 Targets of Coverage of NCD Health Screening among the Target Groups

(%)

	2005	2010	2020
Hypertension: Blood Pressure Measurement	70	80	100
Diabetes: Urine Examination	70	80	100
Breast Cancer	25	50	80
Cervical Cancer	25	50	80
Regular health screening including the above and others (weight, height, blood chemistry, CBC, etc.)	20	50	80

(4) Strategies

Giving further focus on the target groups and the venue of health education to other than those in past health education which targeted communicable diseases.

Health education on communicable diseases has been conducted relatively constantly for community members. The venue for it has been a community and/or religious meeting. Community leaders, monks, VHVs or health staffs have conducted health education. The target group for each occasion was not very strictly specified, rather inclusive. This can be attributable to the nature of the diseases, which are passed on to other people, often regardless of age and sex. This approach succeeded in reducing communicable diseases. However, since causes of NCDs are closely related to an individual's lifestyle, the target groups of health education should be more focused to the persons who have higher risks for a particular NCD.

And health education for NCDs might be more effective by being topic-wise, depending on the complexity of the cause-effect relationships and the development of a particular NCD.

Including individual guidance from health professionals on changing the lifestyles of the high-risk people.

Conducting collective health screening for the target groups regularly at the places to which physical access of the people of the target group is easy. Another thing to consider is conducting the health screening at a time convenient for these people.

Utilizing opportunities of health screening as venue for health education.

Formulating groups among people who share the same issues of high-risk lifestyle and facilitating individual voluntary efforts to change lifestyles and mutual support for these efforts among the group members.

Strengthening capacity of health facilities for health screening of NCDs.

(5) Activities

Activities in the short-term for this project are as follows:

< Health Screening>

- To increase the coverage of the health screening among the target groups by combining occasions for health screening and health education.
- To evaluate accuracy of screening conducted by lower level of health facilities and to strengthen the screening capacity of these health facilities, particularly with respect to results.

< Health Education >

- To conduct topic-wise health education for specific target groups.
- To take advantage of non-health-related meetings for health education in order to cope with the busy lives of factory workers and farmers. Meetings at factories or at agricultural cooperatives can be used as the venue for the health education.
- To increase the capacity of health staff firstly and VHVs secondly for health education on NCDs
- To set up peer groups among the high-risk people in the target groups for ensuring that these people make an effort to change their styles of life.

< Information Management on NCDs>

- To increase the capacity for collecting data on NCDs in regard to socio-economic situations of the high-risk group and the patients.
- To introduce a register system for some of the NCDs, such as cancers and severe diabetes, to evaluate their control policy and formulate more appropriate ones.

Activities in the long-term for this project are as follows:

< Health Screening >

- To review and increase items for health screening according to the changes of health structure as well as other socio-economic factors.
- To increase the coverage of health screenings by introducing a "one-stop health screening" by which people can undergo all kinds of necessary tests at one place. This requires further increase in the screening capacity of district and provincial hospitals.
- To strengthen the laboratory capacity of provincial hospitals in regard to NCDs, as a central referral laboratory within the province.

< Research/Health Education>

- To conduct research surveys continually by collaboration among the four provinces in NBR on some peculiar causes of NCDs, such as eating habits peculiar to NBR, in order to formulate more appropriate methods for the health education.

(6) Issues for Implementation

Since NCDs are chronic and their symptoms are not acknowledged accurately, people who have not had opportunities to obtain information about them have difficulties in understanding the magnitude of NCDs on their lives. Therefore, their participation will not increase for the short term. Also, their behavioral changes for prevention of NCDs will not occur in the short term for the same reason. Farmers might belong to this group of people.