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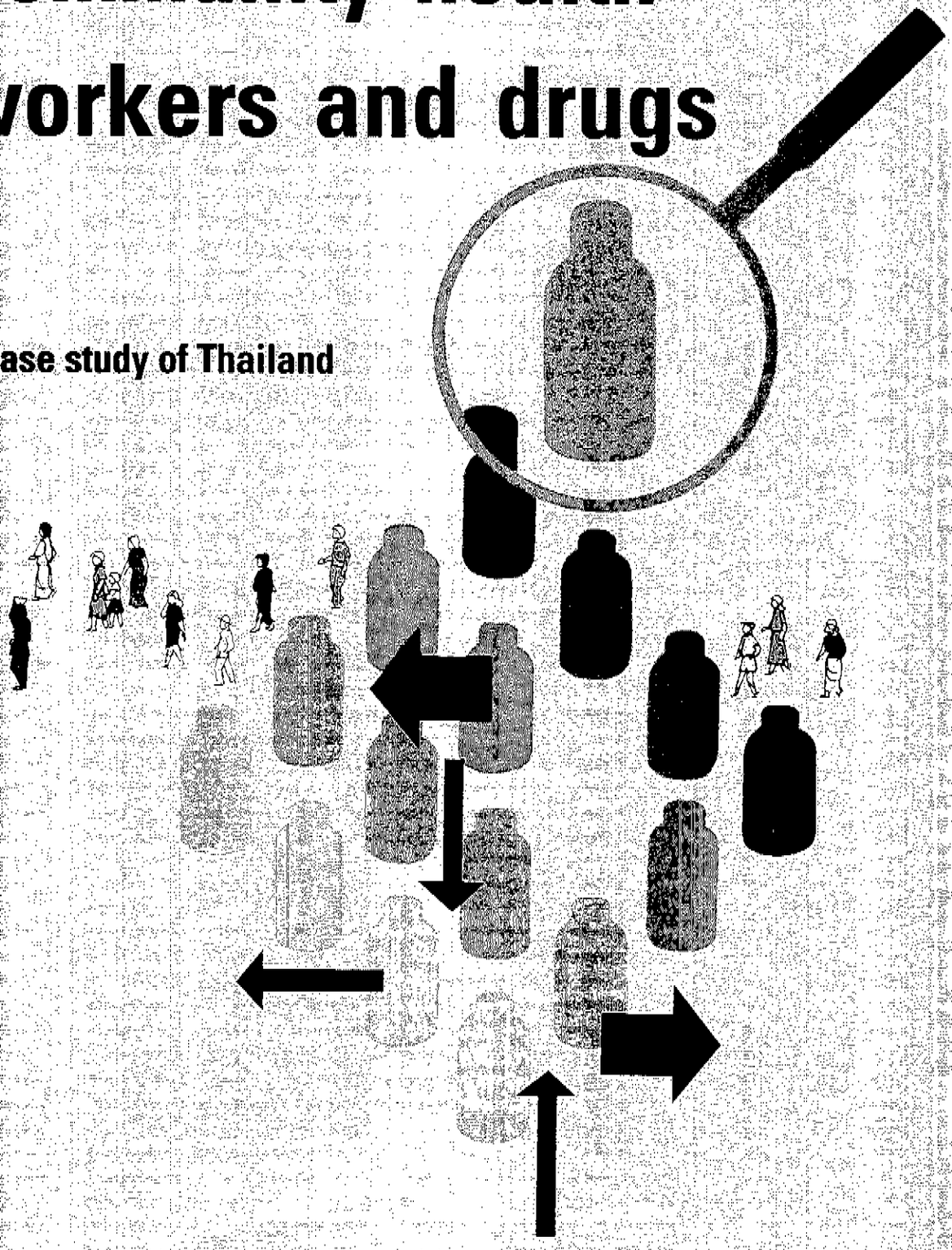
Community health workers and drugs

A case study of Thailand



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IMPLICATIONS OF COMMUNITY HEALTH WORKERS DISTRIBUTING DRUGS

A case study of Thailand

Action Programme on Essential Drugs

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LIST OF ABBREVIATIONS

BHS	Basic health services
CCPHC	Community center for primary health care
CHW	Community health worker
GPO	Government Pharmaceutical Organization
MoPH	Ministry of Public Health
OTC	Over the counter drugs
PHC	Primary health care
VDF	Village drug fund
VDPP	Village drug provision profile
VHC	Village health communicator
VHV	Village health volunteer

SUMMARY

This study aims to analyze the role of CHWs in drug distribution at the village level. Emphasis is on the implications of such a role for the enhancement of rational drug use by consumers and for the attainment of the total range of CHWs' activities. Specific research questions are directed at the relative importance of CHWs in drug provision, in comparison to other drug sources available to villagers. Both quantitative and qualitative methods of data collection are used in this study, including: 1) mailed questionnaire survey; 2) rapid appraisal survey of Village Drug Fund (VDF) and other drug sources in the village; 3) field-visits; 4) village case studies.

It can be concluded, in general, that the VHVs (Village Health Volunteers) and VDFs (Village Drug Funds) play an extremely limited role in the provision of drugs in Thai villages. Their contribution toward appropriate use of drugs by consumers is limited. The prevalent situation in the villages is one of availability of a wide range of drugs from various sources. The common outlets include: groceries, Village Drug Funds (VDF), drug peddlers, private clinics, and injectionists. Groceries, of which there are, on average, four per village, are the most common source of drugs. Functioning VDFs were found in roughly half of the villages, the majority of which are single VDFs (i.e. not combined with other activities in a cooperative or merged with a grocery, not part of the newly introduced CCPHC). Drug peddlers visit almost all villages, selling drugs ranging from OTC and prescription drugs to herbs and "Ya-Chud" (mixed bags containing various drugs, including prescription drugs). Their visits increase during agricultural peak periods. Clinics which are run privately by government health center staff and hospital nurses are particularly, but not only, important for provision of injectables. Injectionists are a source of antibiotics and intravenous solutions. This abundance and easy availability of drugs in the villages constitutes an extremely unsuitable environment for the enhancement of appropriate drug use by consumers.

In each village OTC drugs, prescription drugs and traditional medicines were available. On an average 42 drugs (measured by the number of brand names) were available per village. Eighty-two per cent of available drugs were modern pharmaceuticals, 20% of which were prescription only drugs. Among the prescription drugs antibiotics with 54% formed the largest proportion, followed by anti-inflammatory drugs (11%), anti-diarrhoeals (11%) and "Ya-Chud" (10%).

No marked provincial or regional difference in the presence of drug sources at the village level has been found. The situation of drugs and drug sources in the majority of villages is quite similar: a wide range of drugs from various sources. However, village size (measured by the number of households) is a decisive differentiating factor. The bigger villages which have more drug outlets, specifically a large number of groceries, sell a wider range of drugs, than the smaller ones. This reflects the situation in which various drug sources respond to the demand in a context where restrictions are hardly implemented. The presence of other types of drug sources i.e. private clinics and drug peddlers also reflects the demand side. Private clinics of health center staffs and district hospital nurses are always located in the populated villages. Injectionists, on the contrary, are likely to be present in areas that are peripheral and relatively socio-economically backward.

If VHVs (village health workers with curative and preventive tasks which include distribution of drugs) are involved in distributing drugs in the villages, they do so in the context of the

village drug funds (VDF). Three major forms of VDF were found: single VDF (the majority), VDF cum grocery, and the newly introduced Community Center for Primary Health Care (CCPHC). Drugs available at the single VDF are mostly OTC drugs produced by the Government Pharmaceutical Organization (GPO). Because the single VDF usually keeps the narrowest range of drugs of all available village drug outlets it has a very low sale volume and is, consequently, difficult to sustain. In fact, many of the single VDFs still considered to be functioning have a very sleepy existence. VDF cum groceries, i.e mergers of a VDF with a grocery shop, are run commercially and respond to the community demand for a wide variety of drugs. It was found that medicines kept in stock by VDF cum groceries included about 20% prescription drugs. Hence, the VDF loses its role as provider of essential drugs to the villagers and in due course, de facto, disappears.

In addition, drugs from the VDF played a very limited role in actual household drug use. From the household drug use survey in ten villages with a functioning single VDF, including 644 tracer illness episodes, it was found that in the majority (45%) of the 644 episodes the medicines used were purchased from grocery shops. Drugs from VDFs were acquired in only 12% of episodes and in a very selective manner: more frequently for cough and cold and fever and headache but much less frequently for diarrhoea, stomach-ache, and muscle pain. Household stocks of drugs played an important role in the villages of Chiangrai in the North. Health centers, district hospitals and private clinics were relatively important sources of drugs for episodes of severe diarrhoea and cough and cold. Drugstores in town, traditional practitioners, and injectionists were seldom resorted to for these kinds of common illnesses. However, in case of serious and chronic work-related complaints, besides groceries, injectionists and private clinics were frequently resorted to.

In areas where many VDFs are functional, the basic health service (BHS) staff has a supportive role toward the VDFs. The supporting activities are supply of drugs, regular supervisory visits, and periodical auditing visits. These activities are very important for the sustainability of VDFs. However, they do not directly relate to the enhancement of rational drug use by consumers.

On the basis of these findings, the research team proposed three main recommendations to the Thai MoPH. First, Thailand should urgently formulate and implement a policy that directly addresses the promotion of rational drug use by consumers at all levels. Such a policy should place very serious emphasis on the appropriate use of drugs in self-medication. The enforcement of regulations and strict control of distribution of, particularly, prescription drugs as well as other accompanying measures, constitute decisive actions. Second, education of the public toward appropriate use of drugs must be implemented. It should address the causes of inappropriate drug use by consumers and take people's drug use culture into consideration. A participatory approach is recommended for developing effective education measures. Third, under the prevailing socio-economic conditions in the rural areas the present village community health worker scheme is difficult to sustain. It is, therefore, recommended that the government study ways to develop community level primary health care which is better adjusted to the perceived needs and professionally defined health requirements of village populations.

An additional recommendation to nongovernmental organizations in the field of health is to form a decentralized consumer organization which can monitor the situation of drug provision and consumption at the village level.

CHAPTER I

1. INTRODUCTION

This study is concerned with two cornerstones of Primary Health Care: Community Health Workers (CHWs) and drugs. The community health worker has been the distinguishing feature of primary health care programmes in many developing countries since the Alma-Ata conference in 1978. Many countries launched a national scheme resulting in the nationwide training of CHWs[1]. The general goal of these schemes is similar: to head toward Health For All by providing equitable, accessible and low cost health care to the majority of the population.

Drugs, in particular essential drugs, according to the primary health care strategy as defined by WHO, are important elements of primary health care and "should be available at the various levels of primary health care at the lowest feasible cost"[2]. In many countries, to attain such an objective, drugs are provided by the CHWs[3].

The involvement of the CHWs in drug provision has two important aspects. On the one hand, the goal of making essential drugs available at the lowest feasible cost to the population at the peripheral level can be met in this way. Although the concept of rational use of drugs by consumers has not been explicitly stressed in the WHO-defined PHC, this can be expected to be promoted through the availability of essential drugs as well as by the educative activities of the CHWs. On the other hand, the CHWs' involvement in drug provision may result in strengthening their position in the community.

Distribution of drugs by community health workers in Thailand

Thailand is one among many developing countries which has launched a CHW programme at the national level. A large number of two types of CHWs: Village Health Volunteers (VHV) and Village Health Communicators (VHC), have been involved in the national Primary Health Care Programme since 1977. By 1986, in almost all villages VHVs and VHCs had been trained. The total numbers of these CHWs were 510,286 and 53,498 for the VHCs and VHVs respectively[4]. Such a large number of CHWs has made the VHV/VHC scheme the most important activity of the Thai national PHC Programme.

Aside from the other assigned tasks, the VHVs/VHCs are also expected to be involved in drug provision in their communities. The Village Drug Fund (VDF) is a community-based organization introduced by the Ministry of Public Health (MoPH) to be established in all villages. Its objectives are fivefold: 1) to be a distributing outlet of essential, cheap, and good quality drugs; 2) to enhance the CHWs' work performance; 3) to encourage community participation; 4) to raise funds for other community development activities; and 5) to contribute to protection of consumer's rights[5]. The VDF scheme has been implemented nationwide. As of 1991, 35,819 VDFs were reported to have been set up throughout the country[6].

However, the drug provision role of the Thai CHWs has been continuing amidst many obstacles. The national PHC Programme has been faced with the problem of a high VHC drop

out rate and difficulties in maintaining the active VHVs[7]. In addition, the drug distributing role of the VHV/VHC has evolved in an environment of abundance of drugs. As of 1993, Thailand had about 30,000 drug formulations, which makes one of the countries with the highest number of drug formulations in the world[8]. The total drug consumption in 1993 was about fifty thousand million Bahts; about 35% of total health expenditure. One-third of this was consumed through people's self-medication[9]. In the provinces, modern pharmaceuticals can be obtained through a vast variety of outlets, from drugstores in provincial towns to grocery shops in the villages, from legal channels to illicit ones such as drug peddlers, injectionists and traditional practitioners. Most of the drugs from these sources are usually obtained without a prescription.

Background and focus of the study

This study is a part of the research project "Inter-country study on Implications of Community Health Workers Distributing Drugs (Ghana and Thailand)" which has been technically and financially supported by WHO's Action Programme on Essential Drugs and technically supported and coordinated by The Royal Tropical Institute (KIT) in Amsterdam. The composition of the Thai research team was as follows: Professor Dr Thavitong Hongvivatana (project director and principal investigator); Luechai Sringernyuang (senior researcher) and Penchan Pradabmuk (researcher). Professor Dr Pieter Streefland of the Royal Tropical Institute was the project's advisor.

The focus of the whole project (Thai-Ghana Studies) is on three important aspects of the central theme of CHWs distributing drugs: 1) the implications for utilization of CHWs services and the attainment of other PHC objectives; 2) the implications of CHWs receiving payment for drugs; and 3) the implications for rational use of drugs by the consumer. On the basis of this approach, research objectives and questions are listed as follows:

Objectives

1. To determine the extent to which CHWs distributing drugs contribute to rational use of drugs by consumers. To determine whether BHS support has contributed to strengthening the capacity of CHWs to enhance rational drug use by consumers.

2. To determine the extent to which involvement of CHWs in provision of drugs/management of drug funds influences their range of activities.

3. To determine the implications of involving CHWs in financing mechanisms using drugs.

Given the above objectives, specific research questions for Thailand were defined as:

1. Which village drug provision profiles (VDPP), including the relevant activities of BHS and private sources of drugs, prevail in the villages of Thailand?

2. How are these VDPPs differentiated by socio-economic and cultural area characteristics?

3. What is the current status/performance and relative importance of VDFs and VHVs distributing drugs in the villages?

4. With regard to involvement of VHVs in distribution of drugs/management of drug funds in the context of the total range of sources of drugs used by villagers:

   4.1 What is the relative importance of various sources of drug distribution in the drug consumption pattern of the village population?

   4.2 How do, respectively, BHS staff, VHVs and villagers perceive the provision of drugs by VHVs, VDFs, groceries and other sources?

   4.3 What is the range of drugs VHVs and other sources distribute and where are they obtained?

   4.4 Within the total range of activities of village cooperative stores what is the relative importance of distributing drugs?

   4.5 What is the relative importance of distribution of drugs in the daily activities of, respectively, VHVs who are involved and those who are not involved in the management of VDFs?

   4.6 How are the payment of VHV services and the operation of the VDF arranged?

   4.7 Do VDFs make any special allowances for poor villagers?

   4.8 What practical problems occur in the operation of VDFs?

   4.9 What are the drug demands villagers make to VHVs and other sources and how do they cope with these demands?

   4.10 Do the VHVs issue the correct dosage of drug for the appropriate length of time for the symptom/disease diagnosed, according to a defined standard?

   4.11 What advice do VHVs and other providers offer to their customers concerning use of drugs?

5. Do/did the BHS provide support to the VHVs to strengthen their capacity to enhance rational drug use by consumers?

Structure of the report

This report is divided into five chapters. Chapter I serves as an introductory note, providing an overview of background and study objectives. In Chapter II, the situation of the PHC and CHW Programme of Thailand is analyzed on the basis of review of documents and field survey data. Roles and performances of VHV/VHCs and VDFs are discussed, with emphasis on their drug supply role. The situation of village drug provision profiles (VDPPs), specifically from the 195 surveyed villages, is analyzed in Chapter III. Sources of drugs and the range of drugs available in the villages are extensively described and compared. In Chapter IV, data on community drug use, mainly derived from the fifteen-case-study villages, are presented. Patterns of drug use and their sources in self-medication of the sample households are analyzed; the relative importance of each drug source, specifically the VDF is described. Chapter V provides the conclusion of the study and gives some recommendations based on this study. Details about the research methodology are presented in Annex 3.

CHAPTER II

2. COMMUNITY HEALTH WORKERS, VILLAGE DRUG FUNDS, AND THE THAI PRIMARY HEALTH CARE PROGRAMME

The role and performance of Thai community health workers (CHW) - known as Village Health Volunteer (VHV) and Village Health Communicator (VHC) - can only be fully understood in the context of Thai Primary Health Care policy. During the almost two decades of implementation the Thai PHC Programme has not only produced a large number of VHCs and VHVs all over the country, but also has introduced various community organization strategies which, directly or indirectly, have affected the role and performance of the two types of community health workers.

The objectives of this chapter are twofold. First, to provide an overview of the evolution of the Thai PHC Programme in which the VHV/VHC scheme is embedded. Second, to describe and analyze the role and performance of the VHV and VHC and Village Drug Funds (VDFs) from a macro-perspective. Relevant policy literature will be reviewed to serve the first purpose. Survey data from field visits and mailed questionnaires, as well as results of previous studies, will be used to attain the second objective.

2.1 The evolution of the Thai primary health care programme

Government initiatives in developing a health service system for the rural communities in Thailand can be traced back to the early 1960s. At that time some pilot projects which aimed to develop a health service delivery system for the rural areas were tried out with the support of WHO, UNICEF and USAID. Experiences from those projects were then discussed in two PHC-related national seminars. The conclusions from those seminars were presented at the international conference on PHC at Alma-Ata[1].

The official adoption of the national PHC Programme in Thailand took place in 1979, when the cabinet approved the inclusion of the PHC Programme in the 4th National Economic and Social Development Plan (1978-1981). In November 1980, the Office of the Primary Health Care Committee, a division-level office, was set up within the MoPH[2]. Subsequently, the national PHC Programme was established. Many community-based projects were launched and implemented nationwide. The 5th Health Development Plan period (1982-1986), may be considered the golden period of Thai PHC, as many innovative PHC projects were developed and implemented. Among these were: 1) The Project for the National PHC Campaign Year 1984; 2) The Village Development Fund Project; 3) The Project for Developing the Quality of Life, Using the Basic Minimum Need (BMN) Process and Indicators; 4) The Project for the People's Quality of Life Campaign Years (1985-1987); 5) The PHC Self-managed Village Project; 6) The Health Card Project; and 7) The Mini Thailand Project[3].

Heggenhougen has stated that "many countries which signed the Alma Ata Declaration tend to consider the establishment of a CHW programme as synonymous with a national PHC effort"[4]. This is also true for Thailand. Since the beginning, the Thai National PHC Programme was

predominantly oriented towards the training of VHVs and VHCs. In its first decade of implementation, 99% and 88% respectively of the PHC programme budget for the Fourth Health Plan (1977-1981) and the Fifth Health Plan (1982-1986), were spent on activities directed at training and supporting services and supervision of VHVs and VHCs[5]. As a result, national coverage of the VHVs and VHCs expanded rapidly within this period. Actual coverage, as reported in 1986, reached 99% of all villages. The total number of trained VHCs and VHVs were then 510,286 and 53,498 respectively[6].

2.2 *The VHV and VHC in the Thai PHC programme*

The concept

The concept of involving villagers as volunteers in government service development projects in Thailand was first introduced with the Malaria Eradication Project in the early 1950s. In that project a village health volunteer, namely the malaria volunteer, was trained[7]. In the operationalization of the national PHC programme, the same concept was applied through the development of two types of CHWs known as the VHVs and VHCs. Their involvement was considered as a human resource development strategy. They were envisioned as a concretization of the principle of community participation in PHC, which would contribute significantly to expanding the coverage of basic health services to the rural communities.

The involvement of village members as CHWs in the PHC programme was also considered as an appropriate solution to the situation of the country as such that: 1) People's health is largely affected by the state of poverty and the lack of education; and 2) The resources for national development are limited. Through the activities of VHVs and VHCs, health services in the country would be made available, accessible and acceptable to the majority of the population[8].

The expected roles

According to the national PHC programme, the VHV and VHCs were selected from among the ordinary villagers. They were recruited to voluntarily assist the government in helping their neighbours and relatives[9]. In a typical size village (100 households) there would be one VHV and about 10 VHCs (1 VHC for every 8-15 households)[10]. In the MoPH's instruction, the VHCs had to be recruited by the responsible tambon health workers using a sociogram technique[11]. The VHVs were, subsequently, chosen from among the VHCs after a 3-4 month work period. The qualifications of those who were selected as a VHV were quite high: he or she had to be willing to work devotedly for the community and have enough time to do so, be literate, trusted by the villagers, have a good health and a self-sufficient economic status[12].

Once recruited, the new VHCs had to attend a 5-day-long orientation training. Then, within six months, a refresher course followed. For the VHVs, the 15-day long orientation training would be followed by a refresher course within a period of three months. In addition, both VHVs and VHCs were expected to receive continuous training through the process of regular supervision by the responsible tambon health officials.

Those courses were designed to train both the VHC and VHVs towards becoming effective community health workers. The curriculum included elements of basic health and medical knowledge such as first aid, communicable disease control, sanitation and environmental health,

personal hygiene and family health (family planning, maternal health and child care), and care for minor ailments. Topics on community health problem analysis and group-work techniques were provided as well.

In the curriculum, only two topics dealt with the issue of drug use. The first one was the use of common or household drugs; the other the use of traditional medicines. However, the details of both were focused more on how each specific drug should be taken appropriately rather than on discussing the community drug use issue in more general terms. Nothing relating to the rational use of drugs concept was elaborated in the content of both topics[13].

The VHCs were expected to fulfill a narrow range of tasks in the community. They disseminated information on health problems that affected the village, relayed the health needs of the villagers to the VHVs and/or local health officials, and coordinated health and other development activities in the village[14]. The tasks of the VHVs, on the other hand, included those of the VHCs and, in addition, the provision of basic curative treatment, particularly by using household drugs supplied or recommended by the MoPH. However, the VHVs were also expected to do other activities, that might relate to people's drug use. They were: 1) following-up patients referred to them by health facilities, e.g. patients undergoing treatment for tuberculosis, leprosy, or malaria; 2) taking blood samples for malaria detection; and 3) dispensing condoms and contraceptive pills. In addition, the VHVs were also expected to be the team leaders of all the VHCs in the village.

It should be noted that although the VHV and the VHCs were expected to work voluntarily, some incentives were provided for them by the MoPH. The important one being free medical service at government health facilities for individual VHCs, and for the VHV and his/her family. In addition, activities aiming to provide moral support for the active VHVs and VHCs were also organized by the MoPH e.g. awards for the outstanding VHV and VHC.

Performance and retention

After almost two decades of implementation, the VHV/VHC scheme can be considered very successful in attaining full coverage of villages. However, the programme has also been confronted with problems affecting its sustainability. Most important are the high drop out rate, and the inactivity of the majority of the VHCs.

Many studies on VHV/VHCs' performance conducted during the past 10-15 years have consistently revealed that the number of active VHCs per village was less than a half of those ever trained[15]. In 1987 a national survey reported that during the first decade of the PHC programme (1977-1986), the attrition rate among VHCs was high at 62.4% and the average number of active VHCs per village was only 4-5, regardless of village size.[16] For the VHV, the problem of attrition was less serious than in the case of the VHCs. Results from the same survey showed that the VHVs' attrition was about 25%. However, that study concluded that the performance of the VHVs seemed to be problematic[17].

What have the VHCs actually been doing in their villages? Many studies, particularly village case studies during 1984-1986, found consistently that they were engaged mostly in communication to the target villagers about scheduled activities (e.g. child weighing sessions every three months, outreach immunization sessions and information collection) at the request

of tambon health officers and the VHVs. Health education, their major task, was found to be only rarely practiced[18].

For the VHVs, our mailed survey data (Table 1) indicate that most of the activities they usually engaged in were those requested or initiated by the tambon health officials. The relatively high proportion of VHV's involvement in campaign activities such as in aids prevention, accident prevention, consumer right's protection, and environmental health promotion (31.3-35.9%) could be expected. The high percentage of VHVs who had no role in curative care and in dispensing of contraceptive pills (45.1 and 60.6%), was quite unexpected. The high proportion of VHVs who had been engaged in the child weighing and water container and latrine construction activities was also found in many studies.

In our village case study data, both in Chiangrai and Chaiyapoom, the activities most frequently mentioned by the VHCs and the VHVs as their main tasks were child weighing every three months, information gathering and coordinating health activities requested by tambon health officials. Health education and information dissemination to their neighbours were also claimed to be done, but in a less frequent and unsystematic manner. Even in the villages where the majority, or all, of the trained VHCs and VHVs were reported to be still active, those who were really operational were only a few. Many of the VHCs were reported functioning only because they were still living in the villages and potentially ready for the tambon health workers to be mobilized.

It can be concluded that the problems in the VHV/VHCs programme are still the same as were found in previous studies: how to keep the trained VHV/VHCs and maintain their activities. A study in 1988 directly addressed the possible explanation of the degradation of the VHV/VHC programme, by pointing at the possible major drawbacks of the model, particularly the unrealistic expectations regarding 1) the number of VHCs per village and their preventive/educative oriented roles; and 2) the VHV and VHCs' willingness to work endlessly as volunteers[19]. However, the MoPH still seems to be optimistic. In the present national health plan (1992-1996), the MoPH insists on going on with the model. The ineffectiveness problem of the VHV/VHCs is explained as being caused by: 1) lack of definite work schedules for the VHV/VHCs to follow; and 2) insufficient knowledge among VHV/VHCs to enable them to work confidently[20]. These explanations are, subsequently, the justification for the introduction of a new type of community-based organization: the Community Center for Primary Health Care (CCPHC), which is targeted to cover all villages of the country by 1996, and retain many of the principles of the VHV/VHC scheme.

Table 1: VHV involvement in community-based PHC activities

Activities	Extent of involvement (% of VHV)			N° of VHV
	No	Little	Much	
1. Curative care	45.1	38.6	16.3	4,380
2. AIDS prevention campaign	9.7	54.4	35.9	4,397
3. Accident prevention campaign	11.2	57.6	31.2	4,394
4. Consumer protection campaign	9.4	54.8	35.8	4,359
5. Environmental campaign	12.8	55.3	31.9	4,382
6. Child weighing	4.5	27.4	68.1	4,419
7. Dispensing contraceptive pills	60.5	18.8	20.7	4,405
8. Water container and latrine construction campaign	13.8	44.9	41.3	4,407

Source: Mailed survey (Phase I).
Note: The numbers of VHV per item differ as the activities were covered in different questions in the questionnaires, and not all questions were always answered.

2.3 *The village drug funds (VDFs)*

The concept

During the first years of the PHC programme, each newly trained VHV was expected to manage a 500 Bahts-worth stock of household drugs supplied to him or her by the MoPH. The drugs were expected to be used in the basic curative care provided by the VHV to their neighbours. The stock was expected to revolve: the VHV had to charge his/her clients and use the money to replenish the drug stock. However, this expectation was unrealistic: the stock was depleted rapidly, because the villagers did not want to pay. Their perception was that the drugs should be given to the villagers for free as they were distributed by the government.

In an attempt to keep the initial stock of drugs revolving, a village drug fund idea was developed. It started from a small pilot project in a northern province and became an important MoPH policy in 1980. Since then, VDFs have been set up nationwide in conjunction with the VHV/VHC training project. The coverage of the VDF rose from about 10% to almost 80% of all villages within eleven years, from 1982-1992 inclusive. As of 1991, 35,819 VDFs were reported to have been set up throughout the country[21].

The VDF was originally intended to solve the problem of drug depletion, but once it became the MoPH policy, its purpose was expanded. The MoPH envisioned that the VDF would make available essential, good quality and cheap drugs to the villagers, enhance the VHVs' work

performance, encourage community participation, raise funds for other community development activities and contribute to the protection of consumers' rights.[22]

The most important activity of the VDF was the day-to-day provision of essential drugs to the community. Sixty three items of drugs, mostly common or household drugs, were officially allowed to be available at the VDF[23]. All of them were produced by the Government Pharmaceutical Organization (GPO) and supplied to the VDFs through the government health services structure, especially the district hospitals, district health offices and tambon health centers. The VDF was encouraged to stock only these drugs. No other commercial medicines were allowed to be sold at the VDF. The MoPH supplied a VDF with an initial stock of 700-1,000 Bahts value[24]; after that the VDF procured the drugs from two sources: the health facilities or drugstores.

The relationship between the promotion of the VDF and the concept of rational drug use promotion, was not elaborated systematically. Still, the VDF may, in principle, help in enhancing the rational use of drugs by consumers through making essential drugs available to villagers who live in a context where there is a shortage of (essential) drugs, and where information is lacking[25]. Given the reality of the drug situation in Thailand, such a concept is irrelevant and out of context, as all drugs, both essential and inessential, are widely available.

The VDF and the VHV/VHC

The villages with a VHV and VHCs were expected by the MoPH to set up a VDF. The VHV and VHCs were given the responsibility to start the activity, with the support of the tambon health officials. They were expected to prepare the entire community by disseminating to all community members and leaders information about the VDF and its advantages. Because villagers' participation in the VDF was an important requirement, the VHV and VHCs were also responsible for assessing the villagers' willingness to take a share in the VDF.

The VDF was expected to be managed by an executive committee appointed by the whole community and comprised of village leaders, the VHV and VHCs. The latter were supposed to play active roles in the day-to-day sale of drugs. The executive committee was expected to be involved in procurement of new drugs, stock checking, routine accounting and auditing. Households would take part in the fund by taking shares mostly ranging from five to 20 Bahts per share. The VDF was supposed to have an accounting audit by the end of each year of operation. It was suggested that the profit from drug sales be divided into three to four parts. The first part was for paying back the shareholders; the second, had to be added to the capital; the third, had to be added to the village development fund, if any, or to be used for other village development activities; and the last part was to be used for social welfare for the poor, i.e. for giving drugs to them for free[26]. However, as the profit margin from drug sales was extremely small, in particular for a VDF selling only MoPH supplied drugs, these expectations were hardly realized.

In reality, the operation of the VDF varied widely. Daily drug sale activity differed greatly among VDFs in terms of sale volume and form of operation. Many VDFs were transformed to be groceries or multi-purpose cooperative stores, where drug sale was only a part of the operation. Many others maintained their operation as single VDFs, with a small sales volume and considerable management difficulty. The administrative structure proposed by the MoPH

was extremely rarely practiced. About half of the total VDFs were run by an individual person, mostly the VHV or VHC[27].

VDF retention

Based on routine reporting data, the MoPH claimed that in 1992 still about 78% of the national total 42,119 of VDFs were functioning[28]. Compared to our mailed questionnaire and field-visit data, the MOPH rate for VDF retention is likely an overestimate. The average retention rate based on data from the mailed questionnaires is 42.3%. (The Chiangrai rate of 70% is an obvious outliner). The field-visit retention rates based on the census of VDFs in two sample districts in selected provinces are slightly different from the provincial rates. However, the two districts' average retention rate of 43% comes very close to the average provincial rate[29] (Table 2).

Table 2: Percentage of VDF retention in sample provinces

Province	Retention rate	
	Mailed data (whole province)	Field-visit data (two districts)
Chiangrai	70.1	64.2
Uthaithani	40.1	25.5
Mukdahan	32.7	34.3
Chaiyapoom	32.3	38.9
Angthong	25.0	30.0
Prajinburi	38.9	28.3
Chumporn	42.7	67.1
Songkla	42.3	56.1
Average	**42.3**	**43.1**

Source: Mailed survey and field-visit (Phase I).

2.4 *The drug provision role of the VDF*

Because the VDF is, in practice, the main community-based strategy in (essential) drug provision, it received much attention in the study. In the following section, details of the VDFs and their roles in drug provision are elaborated on the basis of field visits and village case study data.

2.4.1 Operational forms of the VDFs

The main and the most common activity of each VDF was the sale of drugs, but the way this was managed varied. In the present study, from the field-visits of 349 VDFs in the eight sample provinces, three main operational forms of VDF were found: (1) the single VDF; (2) the VDF cum groceries (private groceries and multi-purpose funds or cooperative stores); and (3) community center for primary health care (CCPHC) (Table 3).

The single VDF

The single VDF predominated in the survey. It formed about 57% of the total number of VDFs, with significant provincial differences. Prajinburi in the central led the way with 92.3% followed by Chiangrai in the North with 74.0% and Songkla in the South with 72.7%. Mukdaharn and Chaiyapoom in the North-east had the lowest figures with 9.5% and 12.5% respectively. Differences in perceptions regarding the essential roles of the VDF among policy implementators at provincial/district levels seemed to be an important explanation for such differences in coverage[30].

The single VDFs were found to have most difficulties in maintaining their activities. Among those which were reported to be functioning, performance was found to vary greatly. Many had no drug sale activity for a couple of months, some had regular sale activity but only a few drugs available on sale, some showed no participation any more of other villagers. According to the field visit data almost one-third of the single VDFs (31.3%) reported that their last sale activities occurred longer than two weeks before the survey. On the basis of the mailed survey data, the amount of drugs sold per month of 37% of the single VDF (n=1,949) is below 100 Bahts, which is barely sufficient for economic survival.

In Chiangrai where many single VDFs were found to be still operational, the qualitative data from the case study villages reveals how they survive. Four out of six single VDFs in Chiangrai, during about six years of operation, had changed their caretakers almost every year. Some were managed by requiring all concerned VHV/VHCs to take in turn the responsibility of looking after the VDF for one year.

From these cases, it is obvious that it was unrealistic to engage an individual VHV or VHC, or village head, or other villagers to look after the VDF on a long-term basis. The opportunity cost of time was too high for the VDF manager, who was not earning his/her living from that activity. Since the monthly sale value was not high, the share of five to 35% of monthly net profits which went to the responsible VHV or VHC was absolutely not an adequate financial incentive. Moreover, drug replenishment of the stock through the official health system was usually rather difficult. Support and supervision from the responsible health center and district hospital were rarely adequate. Given the infrequent drug sale activity and low sale volume, the prospect for survival of the majority of this type of VDF has become increasingly slim.

Table 3: Operational forms of village drug funds by province

Province	Single VDF	VDF grocery		CCPHC	Others
		Private grocery	Multi-purpose fund		
Chiangrai(n=73)	74.0	17.8	2.7	5.5	-
Uthaithani (n=29)	41.4	31.0	13.8	13.8	-
Chaiyapoom (n=32)	12.5	18.8	59.4	6.3	3.1
Mukdahan(n=21)	9.5	23.8	52.4	14.3	-
Angthong(n=34)	38.2	41.2	11.8	2.9	5.9
Prajinburi (n=26)	92.3	7.7	-	-	-
Chumporn(n=57)	54.4	21.1	1.8	15.8	7.0
Songkla(n=77)	72.7	13.0	1.3	11.7	1.3
Total (n=349)	56.2 (196)	20.7 (71)	12.0 (42)	9.2 (32)	2.3 (8)

Source: Field-visit (Phase I).

Note: VDFs categorized as "other" were those that are sometimes difficult to be considered as a VDF. Yet they were reported by the responsible health officials as the functional VDF. The operational form of these VDFs were i.e.
1) a clinic privately owned by a VHV;
2) a VDF being looked after by tambon health workers; and
3) two or more separately run VDFs in one village.

The VDF groceries and the multi-purpose funds

In order to be able to survive, the drug provision function of the VDF was merged in some villages with that of groceries-- referred to here as "VDF groceries". In practice, the VDF groceries followed one of two organizational lines. In some villages, particularly in the Northeast, it was the MOPH's policy to merge all existing single PHC funds[31], including the VDF, into a larger multi-purpose village-based fund operating a cooperative store. In other villages it was the local initiative (villagers and/or responsible tambon health workers) to add VDF drug provision to private groceries in order to save the VDF from disappearing. This could again take two routes -- either the owner of an existing private grocery was asked to take care of VDF drug provision or the existing VDF manager found it more practical and of course profitable for himself/herself to invest in and operate a grocery side by side with the VDF drug provision.

Once merged with groceries, the drug sale activity of the VDF would just become a part of the grocery business. Drugs became one commodity among many; highly demanded commercial drugs, usually including prescription drugs, were also added.

The role of VHV or VHCs, if they were involved in these VDF groceries, was different from those in the single VDFs. In the multi-purpose cooperative store, for example, the VHV or VHCs could be one among a group of staff, who had to take turns to look after the business. They might be salesmen/saleswomen, stock checkers or accounting auditors. Their roles as health educators or even drug use information providers, disappeared in these situations.

The community center for primary health care (CCPHC)

In many villages with a CCPHC, defunct VDFs were reported to have been restarted, or existing ones merged as part of CCPHCs. The CCPHC is a further development of the national PHC Programme in the 7th National Health Development Plan (1992-1996). Conceptually, it is expected to be like a village PHC office where all village health development activities will be coordinated, and health information will be provided. The government health officials will use it as a place for giving supervision and technical support to the VHV and VHCs. At the CCPHC, five VHVs, in conjunction with a periodic health center mobile service, are expected to provide preventive screening services (e.g. measuring blood pressure level) and curative care, and also engage in other community-based PHC activities. According to the MoPH concept, the CCPHC will be an effective strategy to help solve the problem of inactiveness of the VHV/VHCs[32]. So far there has not been any systematic evaluation of CCPHCs.

2.4.2 The VDF role in drug provision

The VDF is allowed to carry a list of 63 household drugs which are supplied mostly by the Government Pharmaceutical Organization (GPO) through government hospitals and health centers. Yet our data indicate that the effective drugs stock found at a VDF varied greatly. The VDF grocery carried a wider average range of drugs (45 items for multi-purpose funds and 23 items for private grocery VDFs) than did the single VDF (16 items) and the CCPHC (21 items).

Tables 4 and 1-A (annex 1) show the differences in drugs carried by each type of VDF. The single VDF and the CCPHC kept the highest proportion of OTC drugs, particularly those supplied by the GPO. In contrast, the multi-purpose funds and private groceries kept a much wider range of commercial OTC drugs as well as prescription drugs. Antibiotics and anti-inflammatory drugs were found there in a much higher proportion than in the single VDFs and the CCPHCs.

It can be said that for the VDFs which managed to survive, one of the key strategies adopted was to make the supply more responsive to the social demand by offering a range of commonly used drugs, many of which are prescription drugs. By offering a wider range of popular drugs, the VDF groceries could do business more successfully.

Table 4: Types of drugs available at VDF (by VDF operational forms)

VDF / Types of drugs	Single	VDF grocery		CCPHC	Total (N° of items)
		Private grocery	Multi-purpose fund		
Traditional drugs	**2.7**	**11.2**	**12.5**	**2.0**	**7.2 (621)**
Modern drugs	97.3	88.8	87.5	98.0	**92.7 (8024)**
- Prescription drugs	11.6	18.6	20.9	9.7	15.2
- OTC drugs	88.4	81.4	79.1	90.3	84.8
* GPO-OTC	68.7	41.8	22.5	73.1	53.3 (3409)
* Commercial OTC	31.3	58.2	77.5	29.6	46.7 (2990)

Source: VDF field-visit (Phase I).

Note: GPO-OTC drugs means OTC or household drugs produced by Government Pharmaceutical Organization.
Commercial OTC drugs are OTC drugs produced by private drug companies. Included here are all kinds of drugs which are permitted by the MoPH to be sold over the counter.

CHAPTER III

3. THE VILLAGE DRUG PROVISION PROFILE

A proper assessment of the provision of drugs by VDFs and VHVs/VHCs has to place it in the context of the village drug provision profile; i.e. the total range of sources which provide drugs at village level. This chapter will focus on these drug sources and on the drugs that were found to be available there. On the basis of the mailed survey and the rapid appraisal data, section I gives an overview of the village drug provision profiles with emphasis on the quantitative picture. In section 2, a qualitative description of major drug sources, in particular groceries and VDFs, is provided.

3.1 The village drug provision profiles (VDPP): an overview

Sources of drugs

The most widespread sources of drugs at the village level are groceries and VDFs. Data from all sources, mailed survey, rapid appraisal and village case studies, underline this conclusion. However, the different data sources give quite different figures on the prevalence of other sources. The presence of drug peddlers in the mailed survey data, and of private clinics in both the mailed survey and the VDPP survey is probably under-estimated. According to the data from the case studies in 15 villages, private clinics run by tambon health center workers and nurses from nearby district hospitals are commonly found: in 11 of the 15 villages such clinics are being operated. Besides, drug peddlers also come very regularly to all 15 villages (see Table 5).

There are no marked provincial or regional differences in the presence of various sources at the village level. However, one significant observation can be made in this respect: villages in Uthaithani in the lower North, Mukdahan and Chaiyapoom in the Northeast, Angthong in the Central, and Chumporn in the upper South have a wider variety of sources than other areas, including groceries, VDFs, injectionists, drug peddlers and private clinics (see Table 2-A, Annex 1). This difference in variety of sources in each village seems to be strongly related to the village size (measured by the number of households): the bigger villages are likely to have more types of drug source present (see Table 3-A, Annex 1). Sources of drugs tend to be responsive to the potential village market. The conclusion is further substantiated by a strong relationship between number of groceries and village size. More than 70% of villages of 100 households and less have one to two groceries or none at all; about the same percentage of villages of more than 150 households have no less than three groceries (see Table 4-A, Annex 1). Similarly, although the relationship is not strong, road-side villages are represented more in the categories of three or more groceries (56%) than the limited-access remote villages (38%) (see Table 5-A, Annex 1).

Table 5: Distribution of drug sources in villages according to different data collection methods

Data collection methods / Drug sources	Mailed survey data % of villages (n=4,651)	VDPP survey data % of villages (n=195)	Case studies data N° of villages; (n=15)
Groceries	82.4	97.4	15
VDF	42.6	54.5	10
Drug peddlers	2.6	78.1	15
Injectionists	12.8	9.4	6
Private clinics	12.4	4.0	11

Source: Mailed survey, VDPP survey, and case studies data.
Note: The low percentage of villages with drug peddlers, injectionists, and private clinics in the mailed survey data and injectionists and private clinics in VDPP survey data is due to an under-reporting problem. Details of these methodological weaknesses are discussed in Annex 3 on methodology.

3.2 Drugs in the villages: range and types

Apart from the availability of drug sources, the village drug provision profile can be characterized by drugs available in the village. Two aspects of drug availability are discussed here; the total number of item/brand names, referred to as range of drugs, and their pharmacological types.

Range of drugs

The range of drugs available in each village, measured by the total number of brand names available, indicates the width of drug choices of the people in the village and reflects the drug consumption behaviour of the community. Data from Table 6 reveal that 47% of the villages have a total number of available brand names of more than 40. The provincial or regional differences are considerable; Chaiyapoom (CP) in the Northeast leads the way with 50% of the villages having a total number of brand names of more than 80; on the contrary, Prajinburi (PJ) has only 4.2% of the villages with more than 80 brand names but in this case 50% of the villages have between 41 and 60 brand names. It should be noted that there are 13 villages (6.7%) that have more than 100 brand names per village; among them, four are in Chaiyapoom (CP). On the contrary, more than 60% of villages in Mukdahan(MH) in the Northeast, and Chumporn(CPN) and Songkla(SK) in the South have a drug range of less than 41 brand names.

Table 6: Distribution of villages (in %) with different drug range by province

Range of drugs	CR (n=25)	UT (n=24)	CP (n=24)	MH (n=26)	AT (n=24)	PJ (n=24)	CPN (n=24)	SK (n=24)	Total (n= 195)
< 21	4.0	16.7	4.2	19.2	12.5	0.0	20.8	25.0	12.7
21-40	24.0	33.3	20.8	46.2	45.8	25.0	41.7	37.5	34.4
41-60	20.0	16.7	0.0	23.1	25.0	50.0	25.0	20.9	22.6
61-80	40.0	4.2	25.0	0.0	4.2	20.8	12.5	8.3	14.4
> 80	12.0	29.1	50.0	11.5	12.5	4.2	0.0	8.3	15.9

Source: VDPP survey data (Phase I).
Note: CR=Chiangrai; UT=Uthaithani; CP=Chaiyapoom; MH=Mukdahan; AT=Angthong; PJ=Prajinburi; CPN=Chumporn; SK=Songkla

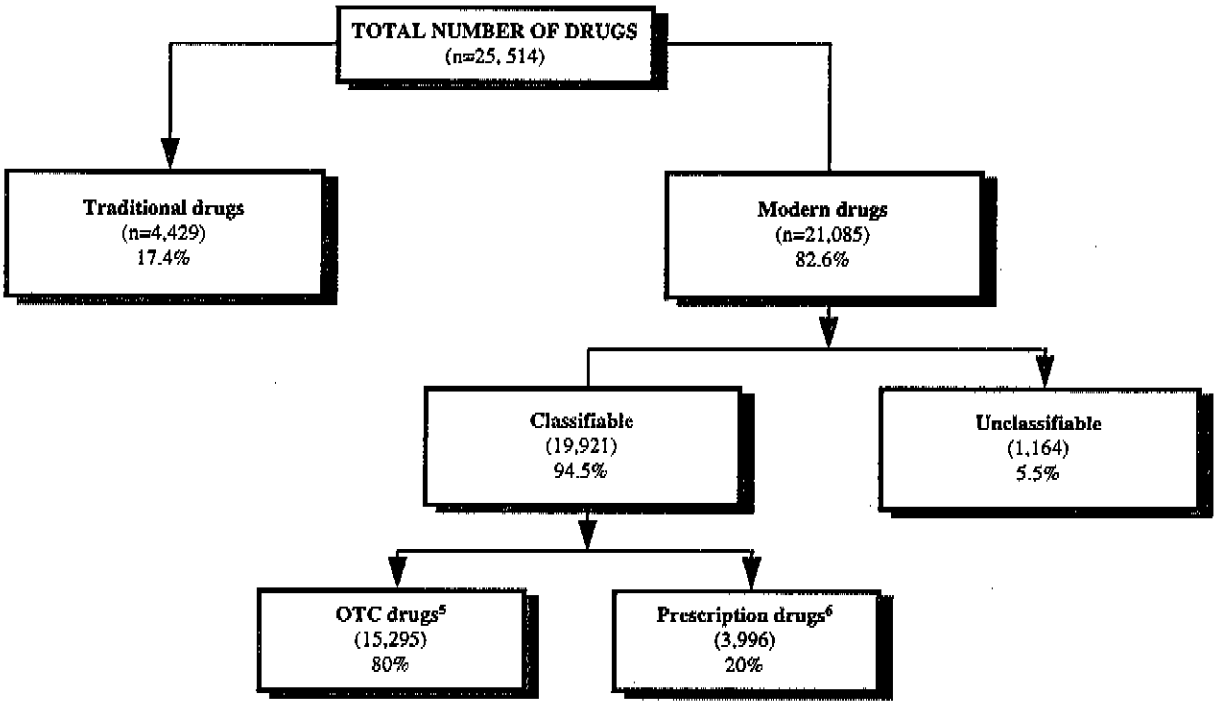
The village drug range is also strongly related to village size. Data in Table 6-A (Annex 1) show that the majority of villages with 100 households or less have not more than 60 drug items; while 54% of villages with 150 households or more have more than 60 items. None in this last group has less than 20 items. The same kind of relation can be observed between drug range and number of groceries in villages as shown in Table 7-A (Annex 1). Considering the association with village location measured by the distance between villages and the nearest town or health facilities, data in Table 8-A (Annex 1) seem to indicate that villages with a wider drug range are those located at a greater distance from town. However, the direction of the relation is inconclusive regarding the variables of distance of villages from hospitals and from drug-stores (see Table 9-A and 10-A, Annex 1).

Types of drugs

The pharmacological types of drugs, like the drug range, indicate the variety of drug choices of the villagers, but do so in a different manner. Drug types reflect the rationality of drug use of the community more directly. In addition, availability of different types of drugs in a certain community can also refer to perceived health needs which then indicate the morbidity pattern of the community.

Among the total of 25,514 drug items[2] collected from groceries and VDFs in 195 sample villages, it was found that 82.6% are modern drugs and 20% of the total classifiable modern ones are prescription drugs[3]. Within the group of over-the-counter drugs[4], common drugs such as those for skin diseases, balm, ear or eye drop, and other external use drugs predominate. Analgesics and antipyretics, anti-cough and cold drugs (i.e. a combination of paracetamol and antihistamine preparations), and antacid and anti-ulcer drugs also form a major proportion. Among the prescription drugs, antibiotics form the biggest proportion, followed by anti-inflammatory drugs and antidiarrhoeals (see Figure 1).

Figure 1: Distribution of available drugs in 195 villages by pharmacological types



Traditional drugs form only 17.4% of the total number of items. Provincial differences vary between Mukdahan province in the Northeast where the proportion of traditional drugs is by far the lowest (5.8%) and other provinces whose range is from 15.5 to 23.6%. For the prescription drugs, two provinces from the Northeast, Mukdahan and Chaiyapoom, lead the group with a prevalence of 23.1% and 22.3% respectively, as compared to between 15 to 20% in other areas.

The extent to which certain types of drugs are available and distributed in the studied villages is elaborated in Table 7. From the data, it can be concluded that all kinds of drugs: prescription, non-prescription and traditional drugs, are obtainable at the village level in almost all of the villages. Among the prescription drugs, antibiotics are the most widely available. Antibiotics were found in all 195 villages except five. Anti-inflammatory drugs and corticosteroids, both of which are supposed to be sold only with prescription, have been found in 118 and 84 villages (60.5 and 43.2%) respectively.

Table 7: Percentage of villages by province where types of drugs have been found

Types of drugs	CR (n=25)	UT (n=24)	CP (n=24)	MH (n=26)	AT (n=24)	PJ (n=25)	CPN (n=24)	SK (n=24)	Total (n= 195)
Trad. drugs	100	100	100	86.8	100	100	100	100	91.7
OTC drugs	100	100	100	100	100	100	100	100	100
Presc. drugs	100	95.8	100	96.1	100	100	95.8	95.8	97.0
Anti- 2) inflam.	84.0	50.0	83.3	69.2	25.0	70.8	41.7	58.3	60.5
Cortico-steroids	24.0	41.7	70.8	34.6	45.8	33.3	50.0	41.7	43.2
Anti-biotics	96.0	95.8	100	96.0	95.8	100	100	95.8	97.4

Source: VDPP survey data (Phase I).

Note: 1) CR=Chiangrai; UT=Uthaithani; CP=Chaiyapoom; MH=Mukdahan; AT=Angthong; PJ=Prajinburi; CPN=Chumporn; SK=Songkla

2) anti-inflammatory drugs include i.e. phenylbutazone, piroxicam, prednisolone, and dexamethasone. Corticosteroids include dexamethasone, and prednisolone which were mixed in many types of "Ya-Chud" especially "Ya-Chud" for muscle pain, "Ya-Chud" for cold/fever, and "Ya-Chud" for malaria.

In conclusion, the village drug provision profiles in the studied villages can be characterized as reflecting plentifulness, both in term of sources (specifically groceries), and availability of drugs. This is the context in which the VHVs/VHCs and VDFs have been working.

3.3 *Major sources of drugs*

In this section a detailed description of major sources of drugs, including the VDF, will be presented based on the rapid appraisal of drug sources in 195 sample villages in the eight sample provinces, and on qualitative data from the 15 village case studies in Chiangrai and Chaiyapoom.

The grocery shop

Approximately 92% of the grocery shops in the 195 sample villages carried a range of common and life-saving drugs as an important part of their business. There were in total 775 grocery stores which sell drugs, or about 4 per village. A strong association between the number of groceries and the village size was found in the 195 sample villages; similar to the findings of the mailed survey data. As to provincial differences, Chaiyapoom (37.5%) and Prajinburi (45.8%)

have the highest proportions of villages with five or more grocery stores, whereas Angthong (54.2%) and Songkla (45.8%) mainly have villages with only 1-2 groceries.

Village groceries were different in size of business (indicated by range of commodities on sale, including drugs), the physical set-up of the shops and the commodities display, and the sale value. On the basis of the first two criteria (size and physical setup) grocery shops were classified into small (75%), medium (21%), and large (4%). Medium and large sized grocery shops differed from small ones by their provision of commodities other than basic household supplies (e.g. fresh food, oil & fuel). Large groceries were differentiated from the medium mainly by availability of fertilizer, agricultural instruments, and construction materials. Further, bigger groceries carried a wider range of drugs: small shops on the average carried only 18 different drugs, while this range was 37 and 57 for medium and large shops, respectively.

The difference in size did not lead to significant distinctions in drug types kept by groceries. Tables 8 and 11-A (Annex 1) show that a similar proportion of types of drugs is available in the three groups of groceries. However, Table 11-A simply indicates that the bigger groceries kept a greater variety of brand names of drugs. Almost every grocer interviewed reported that drugs were added to the stock in response to a demand from villagers for certain drugs. There was no need for grocers to have knowledge about drugs, because drugs were just like other commodities on which villagers possessed definite knowledge and preferences. In most villages, the grocery owners bought drugs to add to or replenish the supply in accordance to villagers' advice and requests (revealed preference) rather than on the supplier's advice. In observing transactions at some grocery shops, it was consistently found that consumers told the grocer the specific drug they wanted, or went and picked up the chosen drugs from the stock themselves. It can be concluded that most drugs at the groceries are well known to villagers. It is the choice of drugs rather than the source that matters to them. Only if the preferred drugs are available at more than one source, is a choice among alternatives required. Then, distance was usually the decisive factor.

Table 8: Types of drugs available at groceries (percentage and total drugs)

Shop size / Types of drugs	Small	Medium	Large
Traditional drugs (n=4262)	**18.2**	**19.0**	**21.1**
Modern drugs (n=18,617)	**81.8**	**81.0**	**78.9**
- OTC-drugs	79.4	78.9	79.8
- Prescription drugs	20.6	21.1	20.2
N° of drugs/shop (mean)	**18**	**37**	**57**

Source: VDPP survey data (Phase I).

The VDF

Ninety-six functional VDFs were found in the total 195 villages, 59% of which were single VDFs. The single VDFs and CCPHCs kept the highest proportion of OTC drugs, in particular those produced by the Government Pharmaceutical Organization (GPO), but had a very limited range of drugs: on the average only 17 and 18.5 drugs respectively. The VDF grocery, particularly in the multi-purpose funds, kept a much wider range of drugs and also supplied various prescription drugs and traditional drugs in addition to commercial OTC drugs (Table 9).

Table 9: Drugs in the sub-sample VDFs (94 out of the total 195 villages)

Types of VDFs / Types of drugs	Single (n=57)	VDF grocery		CCPHC (n=8)	Total (n=94)[1]
		Private grocery (n=15)	Multi-purpose fund (n=14)		
Traditional drugs (n=174)	**4.6**	**13.3**	**10.9**	**0.6**	**7.6**
Modern drugs (n=2,133)	**95.4**	**86.7**	**89.1**	**99.4**	**92.4**
- Prescription drugs	15.3	19.5	24.8	7.5	17.8
- OTC drugs[2] (n=1,799)	84.7	80.5	75.2	92.5	82.2
* GPO-OTC	55.1	43.6	17.3	80.5	47.1
* Com-OTC	44.9	56.4	82.7	19.5	52.9
N° of drugs/VDF (mean)	**17**	**22**	**47**	**19**	**-**

Source: VDPP survey data (Phase I)

Note:
1) two VDFs are excluded from the analysis due to uncompleted data.
2) included in this category are various commercial drugs produced by private drug companies (Commercial OTC or Com-OTC) and household drugs produced by the Government Pharmaceutical Organization (GPO-OTC).

The relative importance of drugs supplied by the VDF, as compared to the total range of drugs available in the villages is shown in Table 10. It is clear from the data that the wider the range of drugs in the village, the less the importance of drugs supplied by VDFs. In small villages the VDF can be a major source of drugs.

***Table 10**: Average number of drugs per VDF by village with different drug range*

	Drug range (N° of brand names in the villages)				
	< 21	21-40	41-60	61-80	> 80
N° of drugs per VDF (mean)	15	20	27	21	20
Village size (N° of hh; mean)	60	94	96	143	112
N° of villages (total=96)	11	34	21	19	11

Source: VDPP survey (Phase I)

Drug peddlers

Drug peddlers come from outside and can take different forms. It can be a man carrying a basket of drugs walking from one village to the next, a man riding on a bicycle or motor-bike with a cloth-bag full of drugs hanging from his shoulder, or a team riding on a peddling van performing magical and/or movie shows to attract a crowd of on-lookers to promote drug sales.

Although there are drug peddlers passing through a village throughout the year, the peak period of their visits is the planting and post-harvesting seasons when the local demand for drugs is highest. The planting season is a period of hard work in the field, and many work-related illnesses, particularly muscle pain, headache and fever prevail. The post-harvesting months, when there is money around from paddy sales, also attracts many peddlers. In the three neighbouring sample villages in Chaiyapoom, twelve different drug peddlers were visiting during that period. These drug peddlers used several techniques for sales promotion. One notable approach was to search for the sick villagers and convince them about the efficacy of the promoted drugs, usually in an exaggerated fashion. Other techniques included the offering of a special sales price, double premiums, and even buying on an installment basis.

It was not possible to estimate the amount of drugs provided by the peddlers. However, something can be said about the range of their drugs. Many peddlers were offering traditional drugs covering five major groups of indigenous ailments: 1) anti-muscle pain and physical health promoting drugs locally called Kasai; 2) drugs for promoting and curing women's reproductive health problems; 3) pediatric drugs broadly labelled as Saang; 4) anti-worm drugs; and 5) special medicines for chronic illnesses like asthma and chronic pain. Most of these traditional drugs were produced by local pharmaceutical companies or small herbalist shops. Modern drug peddlers were of two major types. The first included the peddling vans of major companies, selling widely known pain-killing drugs and anti-stomach-ache drugs. The second type was individuals on motor-bikes or pick-up trucks selling a wide range of muscle-pain and anti-inflammatory drugs, vitamins, and "Ya-Chud". Many of these peddlers were mobile sales outlets of certain district-town drugstores. Other individual peddlers bought their supplies from the very same drug shops in the district.

Private clinics

In eleven out of the fifteen case-study villages, private clinics offered treatments with many drugs, particularly intravenous injection drugs. In the case of the four villages without a private clinic, the nearest clinic was only two to three kilometers away. These clinics were operated by health center workers or district hospital nurses as private businesses during off-working hours and holidays. Generally the health center workers provided their private services at their government houses in the health center compound. However, a more recent trend is for health workers who are well-known to rent a place in a big village to operate a clinic, similar to the operation of a private clinic by a district hospital physician. This is spoken of as tham raan meaning he or she has opened a medical shop just like a medical doctor.

The private clinic services were especially popular in the case of illnesses which were not cured by self-medication (e.g. chronic fever) and severely acute ailments like injuries and sudden stomach-ache. Our household interviews revealed that almost every visitor to the private clinics was given drugs intravenously. A practice popular among many Chaiyapoom villagers was to go to private clinics for intravenous solutions believed to vitalize the tired and fatigued body. In the village community, these private clinics and the responsible health workers were apparently client-dependent. The private clinics have been effectively providing drugs which people perceive as stronger than those already available at village grocery stores.

Injectionists

Injectionists were found only in the Chaiyapoom case-study villages. There were two types of injectionists: professionals, who ask payment, and amateurs. The professional injectionists were mostly former army orderlies who have gained basic medical knowledge and treatment experiences during their two-year military service. The amateur injectionists were villagers who may have learnt some basic treatment skill from the professional ones and are asked by villagers to help. In the seven villages of Chaiyapoom, two professional injectionists were found while the amateurs were seen in all villages.

Data from the in-depth interviews with the two prominent injectionists in two villages of Chaiyapoom reveal that the history of injections and of injection doctors in this area can be traced back to 30 years ago; when the region was less populated, remote, mountainous and off-road. At that time, for common but serious illnesses such as malaria, diarrhoea, dysentery, and accident-caused injury, there was no place to go as a government hospital was too far away. Injectionists, who walked from one village to another carrying with them many kinds of injectables and other "modern drugs" which they bought from pharmacies in provincial towns, or obtained from their old friends working in the military hospitals, were the most important helpers. In this regard, injections are not something new for villagers in these villages; they have known about them for the last three decades. Furthermore, many injectionists, including the two interviewed, were appointed by the Ministry of Interior to be "tambon doctors" which helped to legitimize the roles of injection doctors in this and other remote areas.

In villages like these, people can easily fetch desired intravenous drugs and solutions in two ways: 1) by going to professional injectionists. At the professional injectionist's house intravenous drugs are usually stocked ready to provide treatments to his clients. Most of these drugs are supplied by drugstores in the district town. 2) by buying injectables and a syringe from drugstores in town and asking a familiar injectionist to administer for a fee of 5-10 Bahts. In this regard, the injectionists are, in fact, community outlets for intravenous drugs.

CHAPTER IV

4. COMMUNITY DRUG USE

This chapter presents an analysis of the relative importance of alternative sources of drugs, especially the VDFs, in community drug use behaviour. The data base is a household survey of episodes of five tracer illnesses (572 sample households in 15 villages in Chiangrai and Chaiyapoom) using a one-week recall period for four consecutive weeks. Data from Focus Group Discussions (FGD) and in-depth interviews are used to describe the relation between common chronic ailments and the abundance of life-saving drugs, which contributes to inappropriate drug use in the communities.

4.1 Tracer illnesses and treatment/drug choice

Diarrhoea, cold and cough, fever and headache, stomach-ache, and muscle pain were taken as tracers for common ailments. During the four survey weeks a total of 1,580 illness episodes were reported, of which 1,463 (92.6%) concerned tracer illnesses. Thus the illness episode rate averaged 2.5 per household per month. Table 11 indicates that diarrhoea is least prevalent (0.09 episode per household per month). Cold and cough and muscle pain are most prevalent (0.95 and 0.79 episodes per household respectively). Cold and cough is significantly more prevalent in Chiangrai than Chaiyapoom; but the rate for muscle pain in Chaiyapoom is slightly higher.

All the illness episodes occurred with women more than with men except for muscle pain for which the proportion of male and female episodes is equal. Age differences among those affected by the illness episodes are very obvious: diarrhoea, cough and cold are illnesses of children and the old, stomach and muscle pain belong to those of working age. Fever and headache episodes are found among all ages (see Table 12-A, Annex 1).

Table 11: Frequency of tracer illness episodes
(number and frequency per household per month)

Tracer illness	Chiangrai (n=280 hh)		Chaiyapoom (n=292 hh)		Total (n=572 hh)	
	# eps	#/hh/mth	# eps	#/hh/mth	# eps	#/hh/mth
Diarrhoea	34	0.12	18	0.06	52	0.09
Cough and cold	306	1.09	239	0.81	545	0.95
Fever and headache	92	0.32	129	0.44	221	0.38
Stomach-ache	94	0.34	98	0.33	192	0.34
Muscle pain	205	0.73	248	0.84	453	0.79

Source: Household survey (Phase II).

Most of the episodes recorded are self-limiting. From the total number of 1,463 episodes collected, 68% recovered within three days. Seventy-seven per cent of the episodes were perceived as non-severe. Moreover, in 90% of the episodes only one source of drug/treatment was sought during the illness.

Data of episodes drawn from ten villages that have functional VDFs (n=644) show that even in these villages the grocery is the main source of drugs (Table 12).

Drugs from the VDF were obtained in a very selective manner: more frequently for cough and cold and fever and headache (17%) but much less frequently for diarrhoea, stomach-ache and muscle pain (4.2 - 5.5 %). The use of VDF's drugs by episodes from Chaiyapoom's villages differ very much from those by episodes from Chiangrai's. In Chaiyapoom, a very low percentage of episodes of cough and cold, and fever and headache (3.0 and 7.1 respectively), and zero of those of diarrhoea, stomach-ache, and muscle pain resorted to the VDF. Such figures resulted from two factors: a vast variety and a large number of drugs available from other sources at the village level, and the very poor performance of the VDFs in Chaiyapoom.

It should be noted that qualitative data from Chiangrai's villages strongly support the VDF drug use pattern described above. The VDF were usually perceived by villagers, especially in Chiangrai, as a source of drugs that was better used for children. However, they usually meant some specific drugs such as paracetamol syrup and chlorpheniramine syrup. The drugs available at the VDF were generally perceived as having weaker and slower curing effects when adults were concerned.

Drugs from household stock were used in quite a big proportion for every illness, particularly in Chiangrai. Health center/district hospital and private clinic/private hospital were also important drug or treatment sources for diarrhoea and cough and cold episodes. However, the figures from the villages with VDF (Table 12) and those from the villages without VDF (Table 13), seem to be in reverse: in villages with a functional VDF the health center/district hospital was visited more commonly as compared to the villages without VDFs. Drugstores, traditional practitioners and injectionists are in extremely low demand for these kinds of common illnesses in both settings.

Table 12: Treatment and drugs sources in case of tracer illness episodes of sub-sample households in villages with functional VDF

Treatment/drug sources	Diarrhoea (n=24)	Cough & cold (n=251)	Fever & headache (n=102)	Stomach ache (n=84)	Muscle pain (n=183)	Total (n=644)
VHV/CCPHC	4.0	17.1	17.6	4.7	5.5	11.5
Groceries	28.0	34.3	48.0	43.6	61.2	46.1
Hh stock	16.0	15.1	14.7	24.7	15.3	16.2
Drugstore	12.0	6.4	2.9	3.5	4.4	4.9
Drug peddler	-	-	2.0	4.7	4.4	2.1
Govt.hc/hosp	28.0	20.3	8.9	12.9	6.0	13.3
Private clinic	8.0	6.8	5.9	4.7	2.7	5.5
Injectionist	4.0	-	-	-	0.5	0.3
Traditional pract.	-	-	-	1.2	-	0.1
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: Household survey (Phase II).

Note: 1) "No action" as a treatment option is not included for this analysis.

2) Household samples included in this table are drawn only from villages having functional VDFs (seven from Chiangrai and three from Chaiyapoom).

3) Only those episodes from the ten villages where only one source of treatment or drugs was resorted to throughout the illness are analyzed in this table (n=644).

Table 13: Treatment and drugs sources in case of tracer illness episodes of sub-sample households in villages without VDF

Treatment/drug sources	Diarrhoea (n=9)	Cough & cold (n=108)	Fever & headache (n=79)	Stomach ache (n=78)	Muscle pain (n=193)	Total (n=467)
Groceries	44.4	63.9	78.5	62.8	85.0	74.5
Hh. stock	33.3	8.3	6.3	6.4	2.6	5.8
Drugstore	-	0.9	6.3	10.3	1.6	3.6
Drug peddler	-	0.9	-	-	1.6	0.9
Govt hc/hosp	11.1	4.6	1.3	11.5	3.1	4.7
Private clinic	11.1	21.3	7.6	7.7	5.7	10.1
Injectionist	-	-	-	1.3	-	0.2
Trad. pract.	-	-	-	-	0.5	0.2
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: Household survey (Phase II)

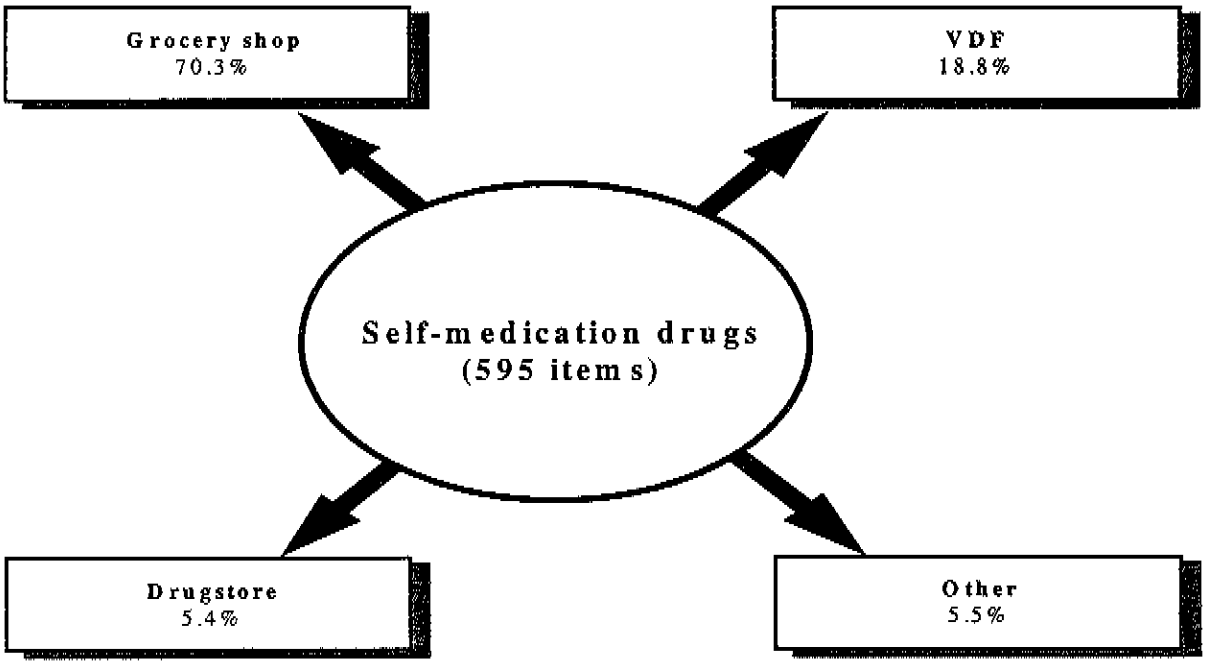
Note: 1) "No action" as a treatment option is not included for this analysis.
2) Household samples included in this table are drawn only from five villages having no VDFs (1 from Chiangrai and 4 from Chaiyapoom).
3) Only those episodes from the five villages where only one source of treatment or drugs was resorted to throughout the illness are analyzed in this table (n=467).

4.2 *Drugs used during the tracer illness episodes*

When analyzing treatment seeking behaviour, it is found that self-prescribed drugs (drugs being chosen by the consumer) amount to 50% of total drugs consumed. The range of drugs prescribed by others varies from 63% for diarrhoea, 50% for cold/cough, 44% for stomach-ache, 38% for fever/headache, to 29% for muscle pain.

Table 14 gives examples of drugs used for self-medication in each case of tracer illness, and indicates the relative importance of their sources, in particular grocery stores and VDFs, in meeting the demand. Consistently, drugs from VDF constitute about 22-30% of drugs used for cold/cough and fever/headache, but for stomach-ache and muscle pain the share goes down to 6-8%. The relative importance of drugs from the VDF can be seen from Figure 2 which shows sources of self-medication drugs. From the total of 595 items, 70.3% of self-medication drugs came from grocery stores; drugs from VDFs had a share of about 19%. It included a very limited range: paracetamol, antihistamine, and anti-cough drugs, used for cough/cold, fever/headache and muscle pain.

Figure 2: Sources of self-medication drugs



Source: Household survey (Phase II)

Table 14: Drug used and sources for self-medication in tracer illnesses

Tracer illness (N° of episodes)	Drug used	Drug sources
Diarrhoea (n=14)	antidiarrhoeals 42.8%; analgesics & antipyretics 1.3%; antacid 7.1%; antibiotics 7.1%	groceries 64.3%; VDF 14.3%; drugstore 21.4%
Cough & cold (n=235)	analgesics & antipyretics 47.2%; paracetamol and antihistamine preparation 17.9%; brown mixture & cough syrup 24.3%; antibiotics 1.3%; "Ya-Chud" 0.9%	groceries 63.4%; VDF 29.4%; drugstore 3.8%; other 3.4%
Fever & headache (n=100)	analgesics & antipyretics 70.0%; paracetamol and antihistamine preparation 9.0%; traditional drugs 9.0%; "Ya-Chud" 2.0%	groceries 65.0% VDF 22.0%; drugstore 7.0%; other 6.0%
Stomach ache (n=63)	antacid & anti-ulcer drugs 65.1%; analgesics 11.1%; antibiotics 7.9%; traditional drugs 6.3%	groceries 77.8%; VDF 6.3%; drugstore 9.5%; other 6.3%
Muscle pain (n=183)	analgesics 71.7%; anti-inflammatory drugs 10.4%; other 17.9%	groceries 79.8%; VDF 8.2%; drugstore 3.8%; other 8.2%

Source: Household survey (Phase II).

From the above results, it is clear that VDFs and CHWs play a limited role in the provision of drugs for common illnesses, as compared to village grocery stores and other sources. Drugs supplied by VDFs, particularly the single VDF, are confined to only a few items: paracetamol, antihistamine and anti-cough drugs. Yet in the previous chapter it was clearly seen that about 20% of the drug supplies at grocery shops and, to a lesser extent, VDFs, are prescription drugs and traditional drugs. Particularly the abundance of antibiotics, anti-inflammatories, "Ya-Chud", and corticosteroids was striking.

4.3 Other health problems and the demand for drugs

The majority of the inhabitants of the villages included in the study earn their living as small farmers and wage-earners. Chaiyapoom's villages, as compared to Chiangrai's, are poorest; they are situated in the high, dry and infertile areas. They have had a problem of drought for some years. It has been very common for villagers of working age there to move into big cities, particularly Bangkok, to get both temporary and permanent jobs. Massive seasonal labor-migration after harvesting (November to April) to work in construction sites and sugar cane plantations in other provinces is also common. In Chiangrai's villages, the economic situation is relatively better; due to the better environment (i.e. fertile land, good water supply), villagers can work all year round.

In such rural socio-cultural and economic contexts, many specific health problems emerge and drug demands develop. The availability of drugs at the village level, which was characterized earlier as plentifulness, undoubtedly also facilitates the development of a specific drug use culture among the villagers.

Work-related illness and drug use

Each year, during the planting and harvesting season (May-January), there is a lot of hard physical work for both men and women in the villages. Changing weather conditions, specifically the unpredictable rain, force many villagers to hurry to finish their field work. In order to have sufficient money to spend while waiting for the end of the year as well as to pay back their debts, most villagers usually earn their living by working both in their own fields and as wage labourers for others. During a year such enduring physical work can cause many illnesses and complaints such as: muscle pain, which ranges from bodily fatigue to serious sharp pain; stomach ache due to irregular meals during working days; cold, fever and headaches caused by overworking and not having enough time to rest; wounds and injuries. Over the years, for many villagers, some illnesses become chronic and the use of some drugs becomes habitual.

Muscle pain, pain killers and anti-inflammatory drugs

Symptoms of muscle pain can range from bodily fatigue (muey-nue mue-tua), back and waist ache (puad-hlang-puad-aw), leg pain (puad kha), which are relatively minor but sometimes chronic, to sharp pain (york) which is more serious. Many kinds of drugs were found to be used for these symptoms: many are modern; some are traditional; some are used for cure, but many more for prevention.

Overuse of muscles or working in the same position for hours each day (i.e. bending over while planting and harvesting in the rice field) normally result in bodily fatigue and back and waist ache; sometimes they come together with slight fever. Pain killers, which usually come as a packaged powder or tablet preparation and widely called "Ya-Song"[1], are commonly used to solve these problems. A lot of villagers used "Ya-Song" to cure such pain; but many also to prevent it. It was felt by many villagers that taking pain killers in the morning or during the working day would help them to work more energetically and longer, and prevent them from having any pain at the end of the day. Using "Ya-Song" during hard working days is, in fact, a usual practice of villagers in many villages of both provinces. Many villagers and grocery store owners told us that it is a tradition for rice field owners to provide "Ya-Song" to their wage-earning workers or mix it in the drinking water as a part of their working conditions.

The frequent use of "Ya-Song" by many villagers, particularly those who are strong and young (i.e. less than 30) normally lasted till the working season ended. Yet for many, the frequent use, over years, and always coupled with chronic muscle pain, developed into another pattern of pain killer use: the habitual use of or the dependence on pain killers. Data from the household drug use survey, especially from Chaiyapoom, reveal that up to 27% of the sample households reported that at least one of their members still used or had at some time used pain killers every day.

Serious muscle pain or joint pain (york) were found to be usually treated with various kinds of anti-inflammatories: phenylbutazone, piroxicam, and corticosteroids (dexamethasone). These drugs usually come in two forms. The first is "Ya-Chud" or a combination of four to six tablets or capsules, with anti-inflammatory drugs as a main component, and locally named as "Ya-Chud" for muscle pain or "Ya-Chud- Mornuad". The other is a single tablet of dexamethasone locally called as "Pradong no.5".

For some acute and relatively serious sharp pains, private clinics and injection doctors (specifically in Chaiyapoom villages) were resorted to. This was also the case for villagers who had developed chronic pain. In such circumstances, injectables (locally called "Ya-Cheed") were usually provided.

Muscle pain and traditional drugs

Causes of muscle pain can also be explained by two of Thailand's traditional medical concepts: Kasai and Pradong. Traditionally, *Kasai* is an adult chronic illness; it can produce various symptoms, but backache will always be among these. It is also conceived that the occurrence of *Kasai* is related to the function of Tai or kidney. To name the illness, it always goes together as Kasai-Taipikarn. For many Thais, backache is believed to have a relation with problems of the kidney, traditionally named as Tai-Ugsaeb.

Pradong is, in fact, a syndrome whose apparent symptoms can cover a wide range. Again, muscle pain is the most important indication. To cure these illnesses, apart from many herbal drugs, many traditional drugs are available in the market, of which the majority has to be mixed up and taken with alcohol, namely "Ya-Dong" or "Ya-Dong-Lao". However, most interesting is the availability of modern drugs whose name is derived by borrowing the traditional concept i.e. "Ya-Chud Pradong 108" ("Ya-Chud" for Pradong), and "Pradong No.5". These drugs are, in fact, corticosteroids.

Apart from curing Kasai, many of "Ya-Dong-Lao" have been described and are believed to affect a wide range of health problems including enhancement and maintenance of body strength. Such beliefs, and, probably, also because the medicine has to be taken with alcohol, are behind the wide availability and the popularity of "Ya-Dong-Lao" in the villages.

Muscle pain, weakness and injectables and intravenous solution

Bodily weakness, another work-related health problem, is treated by injectables and intravenous solution. Prolonged fatigue among women was frequently interpreted as Leaud Noi or "inadequate blood", the cure for which was a visit to a private clinic for an injection of "Ya-Cheed Perm Leaud" or "blood-increasing drug" which was in fact a vitamin. An intravenous solution, with the local name of "Nam-Klue", was believed to help in restoring health and vigour. In the Chaiyapoom study villages, it was not unusual to see people have "Nam-Klue" at a tambon health official's clinic or even to see them purchase "Nam-Klue" from drugstores to have it administered at home by one of their neighbours or by an injectionist. To have "Nam-Klue" to boost bodily strength before going into an intensive piece of work i.e. as a wage-laborer on a sugar cane plantation, was also found a prevailing practice among villagers in Chaiyapoom.

The use of antibiotics

Antibiotics for infected wounds, diarrhoea and cold and cough with sore throat

"Trex 120", "Trex 250", "Rotexin 120", and "Rotexin 250" are trade names of yellowish capsule tetracycline, which locally known as "Ya-Orio" or "Ya-Kae-Taiy" (medicine to cure diarrhoea), are widely used specifically for diarrhoea. Capsules of 120 mg. of tetracycline ("Trex 120", and "Rotexin 120") were used for children; the 250 mg. capsules for adults. It is unclear why and how such concepts have been developed, but the practice was reported by villagers in most of the study villages.

For general infected wounds, "penicillin G" (tablet), "Heromycin", "Kanamycin", "T.C. mycin", "Bomcin", tetracycline (capsule), and chloramphenicol (capsule), were widely used. Interestingly, the way such antibiotics were taken was not only through swallowing but also by grinding the tablets and applying the ground powder directly to the wound. It was said by many villagers that it would help to dry up the wound very quickly. For seriously infected wounds and in case of sexually transmitted disease (STD), injectables of antibiotics were applied.

Antibiotics are widely used in self-medication for serious cough and cold, especially when it comes with fever and a bad sore throat, in children. Many brand names of dried syrup antibiotics could be obtained at the village level i.e. ampicillin, amoxycillin, "Mychochlolin", and "Ampido". Adults, as was mentioned in FGD sessions, sometimes use antibiotics to cure a bad cold with a sore throat.

Antibiotics for uterus pain or Mod-Luk-Ugsaeb

For Thais in general, any kind of antibiotic is always called "Ya-Kae-Ugsaeb" meaning "drugs to cure an infected wound". The term ("Ugsaeb") is always used by lay people to characterize any kind of wound which has pus (hnong), abscess (Fhee) and is swollen (buam). Medical professionals also use this term to communicate with the general public, but in a broad sense: sometimes by referring to infection inflammation, sometimes non-infection inflammation. However, "Ya-Kae-Ugsaeb" is also often associated with sexually transmitted disease or any kind of infected wound of the reproductive organs. Many "Ya-Kae-Ugsaeb" i.e. "Kanamycin", "Penicillin", "T.C. Mycin", or any other one which has the suffix "mycin", would have a second connotation as drugs that cure an infection occurring in the reproductive organs.

It is interesting that villagers in Chaiyapoom study villages widely used "Gano": a popular trade name of tetracycline, or another tetracycline to cure Mod-Luk-Ugsaeb, a complaint of the uterus, because of the misconception of the term Ugsaeb or inflammation: they were made to think through promotion by a local drug company that any kind of Ugsaeb needs "Ya-Kae-Ugsaeb" to cure. The result of which is the wide use of antibiotics called "Kano" for Mod-Luk-Ugsaeb.

The use of "Ya-Chud" and "Ya-Cheed"

"Ya-Chud" is a culturally unique mixed preparation of modern drugs, usually most of them prescription drugs, which is illegal but widely obtainable in grocery shops and drugstores. It is indeed a set of pharmaceuticals containing 4-6 different shapes, sizes and colors of tablets or capsules, put together in a small plastic bag, which normally costs around 3-5 Bahts. "Ya-Chuds" are available for a wide range of diseases. Yet the most popular ones are: 1) "Ya-Chud" for muscle pain which can have many specific names; 2) "Ya-Chud" for a bad cold and fever; 3) "Ya-Chud" to enhance appetite; 3) "Ya-Chud" for diarrhoea. "Ya-Chud" that is available at the grocery shop at the village level usually comes from two sources. The first and the most important source is drugstores in district or provincial towns. The second source is the drugs peddlers. The reason why "Ya-Chud" is popularly used in Thailand is not clear. Yet one can think about its efficacy, as many contain corticosteroids as a major component, its low price, and its inherent promise of a cure combined with increased chance of success because of a combination of many drugs.

"Ya-Cheed" or injection is a popular form of drug application among villagers. Data from FGDs in almost every village of Chaiyapoom, both from male and female groups, reveal that villagers have been familiar with injections for decades. Injections are usually perceived as having a superb efficacy: they are seen as more powerful, stronger, faster and more effective than other types of drugs. Treatment received from clinics of tambon health workers and medical doctors reinforce villagers to think positively towards injections, as injections are frequently provided by these health professionals. "Ya-Cheed" seems to be self-medicated frequently in situations that: 1) the complaints are more serious i.e. a bad cold with severe headache; or 2) fast cure is desired. The wide use of "Nam-Klue" (intravenous solution) by villagers in the study areas to relieve body fatigue can be explained by this desire for the fast cure. The popularity of "Ya-Cheed" among our sample households can be seen from the data presented in Table 15.

Table 15: Percentage of sample households which ever used prescription drugs in Chiangrai and Chaiyapoom

Drugs used	Chiangrai (n=280 hh)		Chaiyapoom (n=292 hh)	
	Ever in past two weeks	Ever in past one year	Ever in past two weeks	Ever in past one year
Antibiotics "Kano" (capsule)	-	-	4.8	26.7
penicillin G (tablet)	1.8	4.3	7.5	18.8
Anti-inflammatory dexamethasone or "Pradong no.5" (tablet)	1.1	3.9	0.7	4.8
"Hawkzone"[1] (capsule)	1.1	2.9	-	-
"Butazone"[2] (capsule)	0.7	1.4	-	1.4
"N.C.R. Cab"[3] (capsule)	0.7	2.4	-	0.3
"Noxa 10"[4] (capsule)	-	-	0.3	0.6
"Ya-Chud Mor- Nuad"[5]	-	-	4.1	13.0
"Ya-Chud Krajaisen"[6]	-	-	1.7	3.4
Injection "Ya-Cheed Perm Leaud"	-	-	1.7	24.3
Other "Ya-Cheed"	4.3	17.1	7.5	45.8

Note: 1),2),3) phenylbutazone; 4) mostly piroxicam but phenylbutazone was also found. 5),6)=mostly dexamethasone.

CHAPTER V

5. CONCLUSIONS AND RECOMMENDATIONS

In the first part of this chapter the results of the study are summarized. After a general concluding statement, the conclusions follow a sequence of research questions which are taken from the research protocol. Subsequently, in the second part of the chapter some recommendations are made for change toward more appropriate community drug use.

5.1 Conclusions

In general, in can be concluded that the VHVs and VDFs play a limited role in the provision of drugs in Thai villages. Their contribution to appropriate use of drugs by consumers is very small indeed. The abundance and easy availability of drugs in the villages are an extremely unsuitable environment for the enhancement of appropriate drug use by consumers. The wide availability of prescription drugs reflects the serious defects of the drug regulation system of the country in this respect.

RQ 1: Which Village Drug Provision Profiles (VDPP), including the relevant activities of BHS and private sources of drugs, prevail in the villages of Thailand?

Findings:

The prevalent situation in the villages is one of availability of a wide range of drugs from various sources. It is a situation of abundance, easy availability due to a variety of outlets, and hardly any restrictions. The common outlets include: groceries, Village Drug Funds (VDF), drug peddlers, private clinics, and injectionists. Groceries, of which there are on average four per village, are the most common source of drugs. Functioning VDFs were found in roughly half of the villages, the majority of which are single VDFs (i.e. not combined with other joint activities in a cooperative or merged with a grocery, not part of the newly introduced CCPHC). Drug peddlers visit almost all villages, mainly during agricultural peak periods, selling drugs ranging from OTC and prescription drugs to herbs and YaChud (mixed bags containing various drugs, including prescription drugs). Clinics which are run privately by government health center staff and hospital nurses are particularly (but not only) important for provision of injectables. Injectionists are an outlet for antibiotics and intravenous solutions.

In each village OTC drugs, prescription drugs and traditional medicines are available. On average 42 drugs (measured by the number of brand names) were available per village. Eighty-two per cent of available drugs were modern pharmaceuticals, 20% of which were prescription drugs. Among the prescription drugs antibiotics with 54% formed the largest proportion, followed by anti-inflammatory drugs (11%), antidiarrhoeals (11%) and YaChud (10%).

RQ 2: How are these VDPPs differentiated by socio-economic and cultural area characteristics?

Findings:

No marked provincial or regional difference in the presence of drug sources at the village level has been found. The prevalent situation of drugs and drug source in the majority of villages is quite similar: a wide range of drugs from various sources. However, village size (measured by the number of households) is found to be a decisive differentiating factor. The bigger villages are found to have more drug outlets, specifically a large number of groceries, and sell a wider range of drugs than the smaller ones. This reflects the situation in which various drug sources respond to the drug use demand in a context where restrictions are rarely implemented. The presence of other types of drug sources i.e. private clinics and drug peddlers also reflects the demand side. Private clinics of health center staffs and district hospital nurses are always located in the populated villages. Injectionists, on the contrary, are likely to be present in areas that are peripheral and relatively socio-economically backward but where drugs are easily available.

RQ 3: What is the current status/performance and relative importance of VDFs and VHVs distributing drugs in the villages?

Findings:

If VHVs (village health workers with curative and preventive tasks which include distribution of drugs) are involved in distributing drugs in the villages they do so in the context of the VDF. Three major forms of VDF were found: single VDF (the majority), VDF cum grocery, and the newly introduced Community Center for Primary Health Care (CCPHC). Drugs available at the single VDF are mostly OTC drugs produced by the Government Pharmaceutical Organization (GPO). Because the single VDF usually kept the narrowest range of drugs of all available village drug outlets it has a very low sales volume and is, consequently, difficult to maintain. In fact, many of the single VDFs still considered functioning have a very sleepy existence. VDF cum groceries, i.e mergers of a VDF with a grocery shop for reasons of survival, are run commercially and respond to the community demand for a wide variety of drugs. It was found that medicines kept in stock by VDF cum groceries included about 20% prescription drugs. Hence, the VDF loses its role as provider of essential drugs to the villagers.

RQ 4: What is the relative importance of various sources of drug distribution in the drug consumption pattern of the village population?

Findings:

A household drug use survey in ten villages with a functioning single VDF, including 644 tracer illness episodes where medicines were obtained from one of the aforementioned outlets, resulted in the following picture. In the majority (45%) of the 644 episodes medicines were purchased from grocery shops. Drugs from VDFs were acquired in only 12% of episodes and in a very selective manner: more frequently for cough and cold and fever and headache but much less frequently for diarrhoea, stomach-ache, and muscle pain. Household stocks of drugs played an important role in the villages of Chiangrai in the North. Health centers, district hospitals and private clinics were relatively important sources of drugs for episodes of severe diarrhoea and

cough and cold. Drugstores in town, traditional practitioners, and injectionists were found to be resorted to only seldom for these kinds of common illnesses.

However, in case of serious and chronic work-related complaints, besides groceries, injectionists and private clinics were frequently resorted to.

RQ 5: How do, respectively, BHS staff, VHVs and villagers perceive the provision of drugs by VHVs, VDFs, groceries and other sources?

Findings:

The drug provision role of the VDF is, in principle, perceived by both BHS staff and villagers rather positively: it contributes to the supply of cheap, good quality, and easily accessible drugs. In practice, it is usual for the BHS staff to think about the VDF as an important health-policy-related activity that must be kept surviving and mentioning in the reports. For villagers, specifically in Chiangrai, VDF were frequently perceived as a source of drugs that suit children (i.e. paracetamol syrup, chlorpheniramine syrup). For adults, VDF drugs were perceived as having weaker and slower curing effect. Complaints about a VDF came more often from its caretakers than others. Many VHVs or VHCs who had been looking after a VDF for years were bored, felt frustrated and wanted others to help them take care of the VDF.

No negative feelings against the drug providing role of sources such as grocery shops and injectionists were mentioned by villagers. In contrast, many villagers questioned why grocery drug sale was illegal as many drugs sold at groceries were allowed to be produced and advertized by the government authorities. They perceived the existence of these sources and the wide range of drugs as a normal condition: they are part of the community's everyday life. Some BHS staff had a more critical view towards these drug sources. Yet almost all of them chose to keep a peaceful relationship with these drug providers as it was much better for their work that requires cooperation with all villagers.

RQ 6: What is the range of drugs VHVs and other sources distribute and where are they obtained?

Findings:

The single VDF, as well as the CCPHC, distributes a very limited range of drugs. The analysis of source of drugs used in household self-medication reveals drugs acquired from the single VDF or CCPHC were mostly analgesics, antihistamines and anti-cough drugs. These drugs were obtained from Government Pharmaceutical Organization (GPO) through district health facilities (i.e. district hospital).

The VDF grocery, similar to any grocery shop, distributes a full range of drugs, including (dangerous) prescription drugs, and many traditional drugs. Drugs are partly obtained from GPO, but mostly in the commercial market.

Many drug peddlers supply traditional drugs. Yet some distribute prescription drugs and some common pharmaceuticals. They frequently obtain drugs from local drug manufacturers in the province and sometimes from drugstores in provincial and district towns.

Private clinics normally provide a wide range of drugs including injectables. Injectionists distribute a relatively narrower range but always injectables, especially antibiotics, vitamins and antipyretics. Their major source of drugs are drugstores in provincial and district towns.

RQ 7: Within the total range of activities of village cooperative stores what is the relative importance of distributing drugs?

Findings:

Normally, village cooperative stores are operated similarly to grocery shops. Various commodities are sold in order to respond to the client's demands and drugs are one item among many. The relative importance of the drugs distribution activity in this context can not be distinguished from other selling activities. The fundamental VDF task to be a provider of essential drugs for the community cannot be expected to be carried out properly in case of the cooperative stores.

RQ 8: What is the relative importance of distribution of drugs in the daily activities of, respectively, VHVs who are involved and those who are not involved in the management of VDFs?

Findings:

VHVs only are involved in the distribution of drugs in the context of a VDF or a CCPHC. In case they run a single VDF, drug distribution will cover only a very small proportion of their activities. If they run a VDF cum grocery, sale of drugs is an important activity, amidst sale of other commodities. On their participation in the activities at a CCPHC nothing much can as yet be said.

RQ 9: How are the payment of VHV services and the operation of the VDF arranged?

Findings:

Generally, the VHVs and VHCs are not paid for their activities. Most of their duties in the community are voluntarily done at the request and under supervision of the health center staff (i.e. child weighing). For those who are responsible for the VDF, they may be given some money derived from the net profit of drug sales each year. Yet this is usually a very small amount. For the VHV/VHC who take part in the CCPHC, a certain small amount of money (i.e. 50 Bahts/month) is provided as a per diem for those who attend supervisory meetings.

The single VDF is expected to be managed by a committee appointed by the community with the VHV/VHC as most active members. Yet, in reality, half of this VDF type are run by a VHV or VHC solely.

VDF grocery has two forms. One is the village cooperative store or multi-purpose fund which is usually developed from the integration of many small and single-purpose PHC funds. Management is similar to that of the single VDF, but due to the larger turnover, payment for the manager is more. The other is a VDF that evolves to do business in a similar way as a grocery shop or the VDF that is looked after by a grocer.

RQ 10: Do VDFs make special allowances for poor villagers?

Findings:

It is advised by the MoPH to the operational VDFs to arrange a part of their net drugs sale profit to provide special allowances for the poor in the village. Yet, in reality, the majority of VDFs had a very low sale volume (about 40% of single VDF had sale volume of less than 100 Bahts a month). This means that in practice no special allowances can be made.

RQ 11: What (practical) problems occur in the operation of VDFs?

Findings:

There are problems at different levels:

1. The VDF operates in an environment characterized by abundance of easily available drugs. It does not, in other words, address a felt need based on scarcity.

2. It is increasingly difficult to recruit VHVs, as providing unpaid services to other villagers is not an appealing proposition. Besides, the prevailing model of VHV addressing simple health complaints is not well suited to a situation where in the village morbidity pattern accidents, AIDS, work-related diseases and chronic complaints take a prominent position.

3. The prevailing drug use culture of villagers emphasizes drugs which are defined by them to be efficacious. In practice, this implies a strong emphasis on antibiotics and other prescription drugs, YaChud and injectables. The VDF's stock of drugs and the VHV's mode of administering a medication do not fit these preferences at all.

RQ 12: Do the VHVs issue the correct dosage of drug for the appropriate length of time for the symptoms diagnosed, according to a defined standard?

Findings:

Drugs from a VDF are mostly obtained on the basis of villagers' self-prescription. People come to buy drugs at the VDF, like they go to any grocery store, with the preconceived notions of what drugs (brand names) they want. Data from observation at grocery shops disclosed that customers normally asked for drugs by mentioning brand names. Many even walked through the back of the shops and picked up drugs themselves. These practices are also common at the VDF. If the VHVs do prescribe for some of their clients, correct or incorrect issuing of drugs is not a point as only a few common drugs are frequently obtained from the VDF (i.e. paracetamol, paracetamol syrup, brown mixture, antihistamine) and they are widely known by villagers.

RQ 13: What advice do VHVs and other providers offer to their customers concerning use of drugs?

Findings:

Some VHVs and other VDF care takers, sometimes, gave advice to their clients about drug use. Their advice usually concerned dangers of YaChud and side effects of Ya-song (a packet of aspirin and caffeine) which they were taught about by health center staff. Yet, most of them complained that their advice was hardly if at all followed by villagers.

Advice on appropriate use of drugs from other sources such as grocery shops, injectionists, and private clinics, has not been systematically investigated, but is expected not to be given.

RQ 14: Do/Did the BHS provide support to the VHVs to strengthen their capacity to enhance rational drug use by consumers?

In areas where VDFs are functional, BHS staff were found to have a supportive role towards the VDFs. However, most of the supporting activities were supply of drugs, regular supervisory visits, and periodical auditing visits. These activities are very important for the VDFs to sustain. However, they did not directly relate to the enhancement of rational drug use by consumers.

5.2 Recommendations

Based on the conclusions the following recommendations can be made:

1. The MoPH of Thailand to urgently formulate and implement a policy that directly addresses the promotion of rational drug use by consumers at all levels. The existing national drug policy has to place serious emphasis on the appropriate use of drugs in self-medication. To facilitate any attempts to solve the existing irrational drug use problem, the regulation and strict control of distribution, particularly of prescription, drugs, must be enforced. Besides, such policy should include other accompanying measures such as: (a) the promotion of essential drugs, specially in the private sector; (b) the reduction of the range of non essential drugs; (c) education of consumers in appropriate use of drugs; (d) regulation and control of drug advertisements (both in writing and on TV/film). The recent regulation which requires all drugs available in the market to have their generic name clearly shown is a contributing measure that should be seriously enforced.

2. Education of the public toward appropriate use of drugs must address the causes of inappropriate drug use by consumers. This implies that provision of information on potentially harmful side-effects and contra-indications of drugs must be conceptually phrased in the terminology of people's drug use culture, take into account people's own interpretations of the causes of illness and be tailored to the nature of the morbidity pattern in the specific rural or urban conditions. To develop such drug use education requires a participatory approach. Further, it is necessary for the effectiveness of drug use education that measures which curtail the abundant and easy availability of potentially harmful drugs in the villages, as mentioned in recommendation 1, are strictly implemented.

3. The present situation of provision and consumption of drugs in the villages lacks an agent which monitors what happens in this field and provides the necessary education and information required for enhancement of appropriate use of drugs by consumers. A decentralized consumer organization may be able to fill this gap.

4. Under the presently prevailing socio-economic conditions in the rural areas a sustainable and effective government induced village health worker scheme which is based on the premise of voluntary provision of time and labour will be very difficult to achieve. It is, therefore, essential that the government studies ways to develop community level primary health care which is better adjusted to the perceived needs and professionally defined health requirements of village populations.

NOTES

Chapter I

1. Walt, G., Community Health Workers: Policy and Practice in National Programmes. A review with selected annotations. London 1988. pp.1-2.

2. Brudon, P., Global Action Towards Rational Drug Use. In: Arundel, A. et al. (edit), Primary Health Care and Drugs: Global Action Towards Rational Use. Proceedings of a conference held in Bielefeld, Germany, September 21-23 1990. BUKO/HAI. Bielefeld 1990. pg 101.

3. Walt, G 1988: 8-9.

4. Jamroon, M. (edit), Report on The Evaluation of The First Decade Of Primary Health Care in Thailand (1978-1987). Office of The Primary Health Care Committee, Ministry of Public Health. Bangkok 1991. pp 23,25.

5. Office of the Primary Health Care Committee (OPHCC). Village Drug Fund in The Primary Health Care Programme. Ministry of Public Health. Bangkok 1989. pg 47.

6. Office of the Primary Health Care Committee (OPHCC). The Evaluation of Village Drug Funds Project. Ministry of Public Health. Bangkok 1993. pg 3.

7. See, for example, Thavitong H. et al., Alternative to Primary Health Care Volunteers in Thailand. Center for Health Policy Studies, Mahidol University. Nakornprathom. 1988.; Panittha, P., A report on Village Drug Fund Evaluation. Khonkan University Khonkan 1988.; and Luechai S., Community Participation in Village Drug Fund : A Survey Study. Unpublished M.A. Thesis. Mahidol University. Bangkok 1987.

8. Suvit V., Drug System in Thailand. unpublished report. Food and Drug Administration. Ministry of Public Health. Bangkok 1994. pp 5-6.

9. Suvit 1994: 10.

Chapter II

1. Jamroon 1991: 23,25

2. Jamroon 1991: 22.

3. Jamroon 1991: 86,89; The Ministry of Public Health, Guidelines of Health Development Towards Health For All. Bangkok 1992. pp 23-27.

4. Heggenhougen, K. et al., Community Health Workers: the Tanzanian experience. Oxford University Press. New York 1987. pg 154.

5. Jamroon 1991: 52.

6. Jamroon 1991: 16.

7. Jamroon 1991: 71-72.

8. Jamroon 1991: 71.

9. Jamroon 1991: 71.

10. This model has been implemented nation-wide since the beginning of the national PHC programme. Yet it was later gradually changed when the problem of high drop-out rate and inactiveness of the majority of VHCs became apparent. The changes seemed to begin at the implementation level in the training of new VHVs and VHCs in some provinces. In those cases, the number of VHC to be recruited were reduced to a level that implies that a certain number of active VHCs can be assured at all times. In some areas, only VHVs were trained, no more VHCs were recruited. In the present 7th National Health Plan, under the programme "The Promotion of Community Center for Primary Health Care" (CCPHC), about five VHVs or VHCs are suggested by the MoPH to be involved in the CCPHC in each village.

11. The MoPH considered it the most appropriate method to recruit the VHCs. Yet, in reality, it was rarely practiced. The important reason was that it took time and could not guarantee that the villager who was chosen through this technique would be the right person or a suitable health communicator. Furthermore, many villagers were not willing to be the VHC after being chosen. It, therefore, was quite usual that the tambon health officials or, sometimes, the community leaders themselves recruited the VHV or VHCs without any participation from the villagers. Also see Thavitong 1988: 62

12. Jamroon 1991: 73.

13. The Primary Health Care Committee Office. The Manual for VHV/VHC Training. Bangkok. ND.

14. Jamroon 1991: 73-74.

15. Tantisirintr et al 1986; Sudsukh 1984; Nutrition Division 1987, cited in Thavitong 1988: 45.

16. Thavitong 1988: 52.

17. Thavitong 1988: 68.

18. Thavitong 1988: 51.

19. Thavitong 1988: 76-80.

20. The MoPH 1992: 27-28.

21. The Primary Health Care Committee Office, Village Drug Fund in The Primary Health Care Programme. Bangkok 1989. p 47.

22. The Primary Health Care Committee Office. 1989: 28

23. "Household drugs" are a group of drugs that the MoPH classifies as common drugs and can be sold over the counter. The former MoPH's list of household drugs contained 63 drugs but has been presently reduced to 42 drugs (see Annex 2). Almost all these drugs are produced by the Government Pharmaceutical Organization (GPO). Household drugs are also promoted as drugs for primary health care by the MoPH. The Primary Health Care Committee Office. The Consumer's Right Protection in PHC Programme: Problems and Solutions. Bangkok 1992. pp 166-170.

24. The MoPH will supply drugs only once per VDF during the setting up period.

25. MoPH 1992: 27-28.

26. The Primary Health Care Committee Office 1989: 32

27. See Panittha 1988; Luechai 1987.

28. The operational definition of functioning VDF used by the MoPH is quite loose i.e. a functional VDF is one that has at least five household drugs; has sale volume 100-200 Bahts/month; and has a continuous drugs supply. See MoPH 1992: 42.

29. Note that a functional VDF was operationally defined in this survey simply as on-going drug dispensing and replenishing activities. Yet about 10% of these functional VDFs did not dispense or sell any drugs within the last four weeks (about two-third or 21 VDFs in Chumporn and Songkla). If this had been taken into account, the effective retention rate would have been lower. On the whole it could be said that with the exception of Chumporn and Songkla, the VDF retention rates from the two different sources of data are quite comparable. It could be concluded that only approximately 43% of the Village Drug Funds ever set up in the whole country was still functional in 1992. The MoPH figure of 78% was apparently too high.

30. An example of such policy is the VDF, once being set up, it could not collapse. It has to exist because it belonged to the government. This kind of perception was found among the VHVs, village leaders and the tambon health officers in some areas which, then, forced them to try to keep the VDFs functioning, no matter how.

31. The other community-based PHC funds promoted by the MoPH are: 1) Nutrition Fund ; 2) Sanitation Fund; and 3) Health Card Fund. Besides, there are also village funds promoted by other ministries i.e. ministry of Interior. These funds are normally set up separately and have often difficulty in surviving.

32. The MoPH 1992: 27-28; The Primary Health Care Committee Office, The PHC Policy in The 7th National Health Development Plan (1992-1996), Bangkok 1992. pp 15-18.

Chapter III

1. The total number of drug items (drug range) in each individual village was drawn from the number of drugs of the grocery with the largest number of drugs (measured by counting brand names or/and registration numbers) in that village. This range was assumed to cover all brand names of drugs available in that village. Drugs with the same formulation are supposed to have the same brand name. Yet, in practice, it was quite usual to come across drugs with different formulations having the same brand name. In this case, drugs with the same brand name but under different formulations (which can be checked by their registration code) were counted as different ones.

2. Drugs items here are the total, aggregated number of brand names of drugs found in all villages.

3. Prescription drugs are classified according to the MoPH categorization.

4. Over the Counter Drugs (OTC Drugs) here comprise household drugs which are mostly produced by the Government Pharmaceutical Organization and other common drugs classified by the MoPH as non-prescription drugs or as ready-packed drugs.

5. Analgesics & antipyretics 29.4%, antibiotics 1.3%, anticough & cold 20.5%, antacid & anti-ulcer 13.9%, antidiarrhoeals 0.3%, vitamin 3.7%, other common drugs 30.8%.

6. Analgesics & antipyretics 5.2%, anti-inflammatory 11.3%, antibiotics 54.9%, antidiarrhoeals 11.1%, vitamin 2.3%, "Ya-Chud" 9.7%, other 5.4%.

Chapter IV

1. Pain killers or "Ya-Song" are also perceived as having a universal effect so they can be used for many reasons. During the FGDs it was quite usual to hear stories about how or why pain killers were used. People in the villages use pain killers in many ways for many purposes ranging from getting relief from headache, body pain and fatigue, toothache, diarrhoea, reducing side effect of drunkenness, reducing irritable temper, to helping to be able to work around the clock. Some villagers use the paper from the pain killers packets to roll a cigarette as they believed that it will make it stronger. In fact, pain killers have become an essential and integral part of the daily life of many villagers. also see Luechai S. et al., Socio-Cultural Aspects of Pain Killers Use: A case study of Thailand. Paper presented at the First International Conference on Social and Cultural aspects of Pharmaceuticals, Woudchoten, Zeist, The Netherlands. 17-21 October 1991.

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ANNEX 1

Table 1-A: Drugs available at VDFs by functional types

Drug types (n=8449) [1]	Single	VDF groceries		CCPHC	Total
		Private grocery	Multi-purpose fund		
Analgesics / antipyretics	12.2	16.0	16.1	11.6	14.0
Anti-inflammatory	0.2	1.3	1.6	0.6	0.9
Antibiotics	5.2	7.8	9.6	5.4	6.9
Anti-cough & cold	17.6	15.2	14.8	16.9	16.2
Antacid & anti-ulcer	17.4	14.3	14.5	17.3	15.9
Vitamin & minerals	8.9	5.8	3.8	8.9	6.9
Other OTC [2]	29.0	22.1	20.6	32.6	25.5
Traditional drugs	2.8	11.4	12.8	2.0	7.3
"Ya-Chud"	0.5	1.0	0.5	0.4	0.6
Other drugs [3]	6.0	5.0	5.5	4.2	5.8
Total	**100**	**100**	**100**	**100**	**100**

Source: VDPP survey (Phase I)

Note:
1) 286 items out of this total number are unclassifiable.
2) Drugs in this group are mostly externally used such as balm, ear and eye drops, and skin disease drugs etc.
3) Drugs in this group are, for instance, antihypertensives, contraceptives, drugs for diabetics.

Table 2-A: Percentage of villages by province where various drug sources have been found

Source	CR (n=25)	UT (n=24)	CP (n=24)	MH (n=26)	AT (n=24)	PJ (n=24)	CPN (n=24)	SK (n=24)	Total (n=195)
Groceries	100	83.3	100	100	100	100	100	100	95.8
VDF	100	54.2	46.2	29.2	25.0	45.8	66.7	70.8	95.8
Drug peddlers	92.0	78.3	96.0	100	91.7	66.7	58.3	41.7	78.1
Injectionists	-	-	24.0	-	12.5	20.8	12.5	4.2	9.4
Priv clinics	-	20.0	8.7	4.2	4.2	-	4.2	-	4.0

Source: VDPP survey (Phase I).

Table 3-A: Presence of drug sources by village size (measured by N° of households)

Drug source	< 50	50-100	101-150	151-200	>200
Groceries	65.3	80.1	86.2	90.6	88.8
VDF	33.1	37.4	45.5	47.0	52.2
Drug peddlers	0.9	2.3	2.8	3.6	3.8
Injectionists	3.8	8.8	13.4	21.5	20.7
Private clinics	5.4	7.5	10.8	16.7	26.1
Drugstores	1.5	4.3	5.7	10.4	13.8

Source: Mailed survey (Phase I).

Table 4-A: Number of groceries by village size (measured by N° of households)

N° of HH / N° of groceries	< 50 (n=602)	50-100 (n=1393)	101-150 (n=1126)	151-200 (n=524)	> 200 (n=743)
None	34.5	19.9	13.8	9.4	11.2
1 - 2	58.5	51.0	32.0	22.9	11.7
3 - 4	6.5	24.1	37.7	33.3	20.5
> 4	0.5	5.0	16.5	34.4	56.6

Source: mailed survey (Phase I).

Table 5-A: Number of groceries by village location

Village location / N° of groceries	Road-side (n=1769)	Off-road but easy access (n=1915)	Remote and difficult to access (n=655)
None	15.6	19.1	18.5
1 - 2	31.5	40.5	43.1
3 - 4	27.1	25.3	23.2
> 4	25.8	15.1	15.2

Source: Mailed survey (Phase I).

Table 6-A: Number of brand names per village by village size (measured by N° of households)

N° of HH / N° of brand names	< 50 hh (n=17)	51-100 (n=80)	101-150 (n=47)	> 150 (n=40)	Total (n=190)
< 21	47.0	26.2	14.9	-	19.0
21 - 40	41.2	36.3	38.3	23.9	34.2
41 - 60	11.8	13.7	25.5	21.7	18.4
61 - 80	-	13.8	10.6	23.9	14.2
> 80	-	10.0	10.7	30.5	14.2

Source: VDPP survey (Phase I).

***Table 7-A:* Number of brand names per village by number of village groceries**

N° of groceries / N° of brand names	1 - 2 (n=74)	3 - 4 (n=62)	> 4 (n=58)	Total (n=194)
< 21	32.4	16.1	3.4	18.6
21 - 40	33.8	38.7	29.3	34.0
41 - 60	16.2	21.0	20.7	19.1
61 - 80	13.5	6.5	22.4	13.9
> 80	4.1	17.7	24.2	14.4

Source: VDPP survey (Phase I).

***Table 8-A:* Number of brand names per village by village distance to district town**

Village distance to district town (km) / N° of brand names	< 6 (n=31)	6-10 (n=54)	11-15 (n=48)	16-20 (n=30)	>20 (n=32)	Total (n=195)
< 21	41.9	11.1	22.9	16.7	6.3	19.0
21 - 40	35.5	31.5	25.0	46.7	37.5	33.8
41 - 60	9.7	25.9	20.9	20.0	12.5	19.0
61 - 80	6.5	14.8	22.9	10.0	9.4	13.8
> 80	6.4	16.7	8.3	6.6	34.3	14.4

Source: VDPP survey (Phase I).

***Table 9-A:* Number of brand names per village by village distance to district hospital**

Village distance to district hospital (km) / N° of brand names	< 6 (n=34)	6-10 (n=45)	11-15 (n=57)	16-20 (n=26)	> 21 (n=26)	Total (n=195)
< 21	38.2	13.3	19.3	15.4	9.1	19.0
21 - 40	35.3	35.6	24.6	46.2	36.4	33.8
41 - 60	14.7	24.4	19.3	23.1	12.1	19.0
61 - 80	5.9	11.1	24.6	11.5	9.1	13.8
> 80	5.9	15.6	12.2	3.8	33.3	14.4

Source: VDPP survey (Phase I).

Table 10-A: Number of brand names per village by village distance to drugstore

Village distance to drugstore (km) N° of brand names	< 6 (n=45)	6-10 (n=56)	11-15 (n=43)	16-20 (n=24)	> 20 (n=27)	Total (n=195)
< 21	28.9	16.1	20.9	12.5	11.1	19.0
21 - 40	35.6	30.4	25.6	45.8	40.8	33.8
41 - 60	13.3	23.2	20.9	20.8	14.8	19.0
61 - 80	13.3	8.9	25.6	12.5	7.4	13.8
> 80	8.9	21.4	7.0	8.4	25.9	14.4

Source: VDPP survey (Phase I).

Table 11-A: Drugs available at groceries (by size of groceries)

Types of drugs (n=22,879)[1]	Groceries size		
	Small (n=537)	Medium (n=187)	Large (n=50)
Analgesics and antipyretics	22.5	17.9	14.9
Anti-inflammatories	1.8	2.0	2.1
Antibiotics	10.2	9.2	8.7
Anti-cough & cold	12.8	13.7	11.8
Antacid & anti-ulcer	10.3	10.3	9.5
Vitamins and minerals	2.0	1.9	3.4
Other OTC[2]	17.5	19.5	23.3
Traditional drugs	18.2	19.0	21.1
"Ya-Chud"	1.4	1.8	1.0
Other drugs[3]	3.3	4.7	4.2
Total	**100.0**	**100.0**	**100.0**

Source: VDPP survey (Phase I).

Note:
1) 286 items out of this total number are unclassifiable.
2) Drugs in this group are mostly externally used such as balm, ear and eye drops, and skin disease drugs etc.
3) Drugs in this group are, for instance, antihypertensives, contraceptives, drugs for diabetics.

Table 12-A: Demographic characteristics of illness episodes (N=1,463)

Characteristics		Diarrhoea (n=52)	Cough/cold (n=545)	Fever/ headache (n=221)	Stomach-ache (n=192)	Muscle pain (n=453)
SEX:	male	32.7	39.3	41.6	34.9	50.6
	female	67.3	60.7	58.4	65.1	49.4
AGE:	1 - 5	46.3	44.0	19.5	4.7	-
	6 - 14	1.9	20.2	15.8	3.6	-
	15 - 30	9.5	11.1	19.0	18.3	22.6
	31 - 50	9.6	17.5	26.3	48.4	45.5
	> 50	32.7	7.2	19.4	25.0	31.9

Source: Household survey (Phase II).

ANNEX 2

LIST OF HOUSEHOLD DRUGS

1. Stomachic Mixture
2. Liquid Paraffin Emulsion
3. Milk of Magnesia or Cream of Magnesia
4. Senna (tablet)
5. Oral Rehydration Salts
6. Alumina and Magnesia (Tablet)
7. Alumina and Magnesia Oral Suspension
8. Sodamint (tablet)
9. Compound Cardamom Mixture
10. Ammonium Carbonate and Glycyrrhiza Mixture
11. Brown Mixture
12. Compound Ammonium Carbonate Syrup
13. Chlorpheniramine Maleate (tablet)
14. Compound Ferrous Sulfate (tablet)
15. Multivitamin (tablet)
16. Vitamin B Complex (tablet)
17. Vitamin C (tablet)
18. Mebendazole (tablet)
19. Aspirin (tablet)
20. Paracetamol 325 mg.(tablet)
21. Paracetamol 500 mg.(tablet)
22. Paracetamol Syrup (pediatric)
23. Asafetida Tincture
24. Sodium Chloride Enema
25. Mandl's Paint
26. Gentian Violet Solution
27. Cold Inhalant
28. Aromatic Ammonia Spirit
29. Scabicide Emulsion
30. Sulphur Ointment
31. Calamine Lotion
32. Coal Tar Ointment
33. Whitfield's Ointment
34. Sulfacetamide Eye Drop
35. Tetracycline Eye Ointment
36. Iodine Tincture
37. Thimerosal Tincture
38. Analgesic Balm
49. Toothache Drop
40. Burns and Scalds Mixture
41. Salicylic Acid and sulphur ointment
42. Salicylic Acid and sulphur Cream
43. Magnesium Sulfate
44. Camphorated Opium Tincture
45. Iodine Tincture
46. Eucalyptus Oil
47. Aromatic Castor Oil
48. Cough Syrup
49. Sodium Bicarbonate Mixture (pediatric)
50. Fish Liver Oil Capsule
51. Multivitamin Capsule
52. Merbromin Solution
53. Kaolin Mixture with Pectin
54. Salol and Menthol Mixture
55. Sulfadiazine Suspension (pediatric)
56. Chloroquine Phosphate (tablet)
57. Quinine Sulfate (tablet)
58. Sulfadoxine and Pyrimethamine (tablet)
59. Sulfadiazine (tablet)
60. Ephedrine Nasal Drop
61. Nitrofurazone Ear Drop
62. Acriflavine Solution
63. Pepermint Spirit.
64 Povidone-Iodine Solution 10%
65. Isopropyl Alcohol 70%

Notes: In the present list (1993 revision), drugs item 41-63 have been removed and items 64 and 65 are additionally included.

ANNEX 3

METHODOLOGY

1. The study objectives

The main objectives of the study are: (1) to gain a better understanding of the roles of the VHVs and VHCs in community drug provision; more particular in the extent of the contribution they make to enhance the rational use of drugs by villagers, and in the extent their performance as community health workers is strengthened due their involvement in provision of drugs. (2) to investigate how the roles of the VHV/VHCs in drug provision are influenced by the context in which they work; more particularly by the availability of drugs and drug sources, by the villagers' drug demands, and by the support they receive from the basic health services.

2. The study design

The study was designed to have an exploratory phase, followed by a phase focusing on in-depth investigation. The perspectives of the drug providers and of the drug consumers have both been included in the study. The first phase was more quantitative and provider-oriented in nature; it comprised of two methods: (1) a VHV/VHCs and Village Drug Funds (VDFs) Survey, and (2) a survey of the availability of drugs and drug sources. The second phase was, on the contrary, more qualitative and consumer-oriented; its main focus was on village case studies using a multi-method approach. Among the methods employed in this second phase were household drug use survey, focus group discussions, observation at groceries and VDFs, and non-structured/informal interviews. The duration of the whole study, excluding the reporting, was 21 months. Its actual operation started in August 1992 and the data analysis ended in April 1994. The field work of phase I and phase II took place, respectively, between November 1992 and January 1993; and between November 1993 and January 1994.

3. The methods

3.1 Survey with a mailed questionnaire (Phase I)

The mailed questionnaire was employed to appraise the current situation of the VDFs and the VHVs/VHCs. It was considered to be the most cost-effective and quick data collection technique to determine nationally representative figures on the VHV/VHC scheme. The data obtained by this method were to be used as a basis for further sampling, and as supporting information on the PHC programmatic context.

Samples and sampling

Eight provinces (approximately 10% of the total provinces in Thailand) covering all regions of the country, were selected for this survey. They were: (1) Chiangrai (CR) from the Upper North; (2) Uthaithani (UT) from the Lower North; (3) Mukdaharn (MH) from the Upper Northeast; (4) Chaiyapoom (CP) from the Lower Northeast, (5) Angtong (AT) from the Central Central; (6) Prajinburi (PJ) from the East Central; (7) Chumporn (CPN) from the Upper South; and (8) Songkla (SK) from the Lower South. The process of selection began by dividing the country into eight sub-regions; the retention rate of the VDFs of each was, then, calculated on the basis of the MoPH's official data. Finally, eight provinces were purposively selected, the most similar in retention rate and socio-economic and cultural characteristics of the sub-region to which they belonged.

Each village in each chosen province was sampled. The tambon (subdistrict) health workers and the district hospital health officers were requested to answer questions on each village's VHV/VHC and VDF situation, as well as on their own personal and working situation. 1,019 tambons were surveyed. The distribution of the questionnaires began in August 1991; two reminders were sent in September and December. As of November 1991 when the field work of the Village Drug Provision Profile (VDPP) Survey was about to start, the return rate of the mailed questionnaires was 70.4%.

Respondents and instruments

The respondents of the survey were health workers at tambon health centers and district hospitals in the sample provinces. Most of them carried responsibility for PHC programme implementation. The instrument used in the survey was a structured, 4-page long questionnaire. It was designed to be used for one individual village and contained 21 questions divided into five main sections: (1) village socio-economic characteristics; (2) drug sources in the village; (3) number of trained and remaining VHCs; (4) the present VHV's socio-economic background, and (5) the VHV's role in drug distribution and his/her other activities.

However, it should be noted that this method has been yielding a rather poor quality of data. A high proportion of the returned questionnaires were incomplete. As to the completed ones, some of the data, specifically those concerning village drug sources and the VHV/VHC, are highly likely invalid when compared to data collected by rapid appraisal techniques in the village drug provision profile survey (VDPP survey) and by qualitative methods in the village case-studies' phase (details of which are presented in the next section). Data about drug sources, in particular drug peddlers, injectionists and traditional practitioners, collected by mailed questionnaire survey, are under-reported. Only data on the presence of groceries and VDFs seem to be comparable to those collected by VDPP survey and village case-studies. In addition, data about the number of ever trained and presently working VHCs in each village are also very contradictory in the mailed survey data.

These methodological drawbacks are probably caused by two factors. First, our assumption that health center staff should know things that go on in all villages under their responsibility is unrealistic. As a matter of fact, this assumption cannot be applied to many circumstances. During our field-visits we found that, although many health center staff live in the villages, many stay outside. Some of them, seldom visit "their" villages. Second, it is probable that filling in five to ten 4-page-long questionnaires with information of five to ten villages (a questionnaire

for each village) would be a very boring task, given the fact that health workers are requested by many organizations to fill in many kinds of questionnaires each year. This may partly explain why many of the returned questionnaires are incomplete and contain contradictory answers.

Because of these problems, data collected by this method are used with great caution in this report.

3.2 *The village drug provision profile (VDPP) Survey (Phase I)*

The operational definition of the VDPP adopted in this study was: the total range of sources which provide drugs in the village. The VDPP survey aimed to collect data on drug sources and drug items available at the village level.

Sample and sampling

The sample villages for this survey were selected from 48 subdistricts in 16 districts of the eight mailed-survey provinces. They were selected through a cluster sampling technique. First, two districts were chosen from the eight provinces; one was centrally located in the province, another peripherally. From each chosen district three subdistricts (tambons) were then selected by using the criteria of geographical distance from the district town, size, and the existence of a functional VDF. Finally, four villages from each sample tambon were chosen purposively. Village with less than 30 households, or where the district hospital or a health center was located were excluded. Priority was given to villages with functional VDFs. In conclusion, 24 villages from two districts and six sub-districts were selected in each province. Additionally, three more villages were included during the field work (two in CR and one in MH)[1] .The total number of sample villages in Phase I was 195.

In each sample village, first, key informants were interviewed to gather information about drug supply lines, the total number of drug sources available, and village socio-economic characteristics. Next, for each drug source mentioned, the provider was interviewed and all drug items available there were recorded. In practice, however, they were only groceries and Village Drug Funds; the total number of which were 775 and 96 respectively (see Table 1, Annex 3) For each drug item, the information recorded was; (1) registration number; (2) trade name; (3) generic name or its formula; (4) legal classification; (5) expiry or manufacturing date; (6) preparation form, and (7) indications[2].

Instruments and data collection process

Rapid appraisal methodology was used in this survey. Four data collection instruments were employed in each sample village: a checklist, two short structured questionnaires, and a record form. The one page checklist only contained short questions. It guided interviews with key informants when the research team arrived in a village. Its main purpose was to help identify village drug sources and to rapidly appraise the village's socio-economic characteristics. The respondents were mostly village headmen and other village leaders. One questionnaire was used to interview the grocery shop owner, the other one, the VDF caretaker. In the grocery shop owner's questionnaire, questions were directed at kinds of commodities available and sources where they were obtained. Questions for the VDF caretaker, on the contrary, were more focused on the routine operation of the VDF. Questions relating to available drugs, how frequently each of them was sold, from which sources each was obtained, at whose suggestions each was

chosen, etc., were included in both questionnaires. The drug record form was used in conjunction with the two questionnaires to record the drug items available in each grocery shop and VDF.

For the field operation, two teams of field workers were formed. Each comprised eight members: six interviewers, who were recruited from experienced graduate students with social science or health science background, and two field supervisors, one of whom was a social scientist from Mahidol University, the other a pharmacist from a local hospital in each sample province or from the Ministry of Health in Bangkok. Accordingly, in total eight pharmacists played the role of field supervisor, a different one in each province. A training workshop was organized to orientate the research teams and pretest the tools.

Table 1: Number of sample villages, VDFs and groceries

Province	Village	Grocery shop	VDF	
			Within sample tambon	Outside sample tambon
Chiangrai	26	83	24	49
Uthaithani	24	94	9	20
Chaiyapoom	24	129	8	24
Mukdahan	25	85	12	9
Angthong	24	71	8	26
Prajinburi	24	103	4	22
Chumporn	24	106	15	42
Songkla	24	104	16	61
N	**195**	**775**	**96**	**252**

***Source*:** Rapid appraisal survey and VDF field-visit.

3.3 The VDF field-visit (Phase I)

The field-visit to VDFs was an additional method to validate the mailed survey data and to gain a qualitative insight in the results of the mailed survey data. The visits were carried out during the same period as the VDPP survey operation. The VDFs visited were from among those reported functional and located in the 195 VDPP survey villages, to which VDFs reported functional in the remaining areas of the 16 sample districts were added[3]. Almost 400 VDFs were visited, but only 351 VDFs were found existing. Instruments used during the visit were a checklist and a drug record form. The checklist was used for a brief interview about the actual operation of the VDF with each VDF's caretaker. The form was used to record drug information.

3.4 The village case-studies (Phase II)

The study villages

The study villages were located in the surveyed areas of the VDPP study in Phase I. Yet, as the field work management was a concern, the case studies had to be limited to 16 villages in two provinces. The criteria for selection of the two provinces were : 1) number and types of the VDFs found in these provinces, 2) their socio-economic and cultural representativeness for the region concerned, and 3) logistic research considerations. On the basis of these criteria, the province Chiangrai in the upper North and Chaiyapoom in the lower Northeast were chosen.

In each province, one of the two former sample districts of VDPP survey was chosen and two of the three former sample subdistricts in that selected district were included. The criteria for selection of both were the same as those being used to select the provinces. Subsequently, all former VDPP surveyed villages in each selected subdistrict were chosen; the total of which were eight per province[4].

Data collection methods

In each of the 16 studied villages five data collection techniques were used: (1) household drug use survey; (2) focus group discussion; (3) observation; (4) drug sale record, and (5) in-depth interview.

Household drug use survey

The survey was intended to assess health-seeking behaviour and drug use of households. It focused particularly on the relative importance of CHW/VDF and other sources of drugs in relation to the villagers' demand. Five tracer illnesses (diarrhoea, cold/cough, fever/headache, stomach and bowel up-set, and muscle pain) were taken as points of reference. Moreover, to maximize the information relating to use of prescription drugs, five tracer drugs were used as well. They were: antibiotics, anti-inflammatory drugs, analgesics, injectables, and "YaChud".

About 42 households with at least one school-age child (< 14 years) per sample village were randomly selected for four consecutive interviews on illness episodes, each using a one-week recall period. Before starting the household survey, a whole week was used to establish rapport with villagers, collect basic community information, and administer a tracer drugs survey in the sample households. Altogether the research team spent five weeks in the same village. With only few exceptions, mothers were the respondents during the survey.

Focus group discussion (FGD)

FGDs were used to validate the data collected by other techniques, particularly those obtained from the household drug use survey. Important themes for discussion were the household attitude towards various drug sources, the drug use preferences related to certain complaints, and the culture of drug use prevailing in the community.

For each FGD seven to nine housewives were selected from sample households of the drug use survey. Their age was between 30 and 50. Another criterion for selection was being a good

informant. In each village, at least one FGD was held, about two weeks after finishing the household survey.

In every village of Chaiyapoom, another FGD for male heads of families was set up as well. This was because the data showed that male heads of families had important problems of health and drug use (e.g., the use of pain killers and anti-inflammatory drugs). Participants in the male FGD had the same characteristics as those in the female group.

An FGD was facilitated by the field supervisor, two to three interviewers took note; tape recordings were also made. Usually the FGD was held in the evening at the house of the village headman.

Observation

Two grocery shops (one small, one big) were selected for observation in the sample villages. Each shop was visited twice in a day, for about one hour in the morning and in the evening. Covert observation was used. What the observer recorded were the number of buyers, what kind of drugs they bought, and the process of transaction, including what was asked, and what the seller told his/her customers. Not only the grocery shops but also the village drug funds were observed in this way. Drug sale observation was conducted during the third and fourth weeks of data collection in each village.

Drug sale record

In each village, the interviewers selected two cooperative grocers, asking them to record all types of drugs sold in the whole week. Day-by-day the grocers received a blank sheet and gave the record of the previous day to the interviewers. In addition, drug sale receipts given by the drug stores where the grocers procured drugs were also collected.

In-depth interview

The informants for these in-depth interviews can be divided into two groups: the VHVs/VHCs or others who operated the VDFs, owners of grocery shops, heads of villages, injection doctors and informative housewives form the first group; the responsible tambon health workers (either working at tambon or district public health office), the second. The interviews of the VHVs/VHCs focused on the operating status of VDFs, their own performance and problems of drug use in the village; the interviews of the grocery shop owners, on their drug sale activities, drug sources, and the buying characteristics of villagers. For injectionists and village heads, the interviews were on villagers' common health problems and health-seeking behaviour.

Issues of public health policy, and the supervision and performance of VHVs/VHCs were put to the health workers to comment on. They were also asked about their opinions on improper drug use and distribution.

Research teams and field management

The case studies were carried out by two research teams, each of which was responsible for the eight villages in one province. Each team comprised nine members: eight interviewers were recruited from among those who held a bachelor degree and did fieldwork before, one field

supervisor who was a researcher from the Center of Health Policy Studies, Mahidol University. To prepare the research teams, techniques of qualitative data collection were practiced and research instruments were pretested during a five day training course.

During the first two weeks, in each team, the interviewers were divided into four sets of two. Each of those was assigned one village. At the beginning of the third week, one member of each set was moved to another village, the remaining interviewers continued to collect data in the initial four villages. The reason for this procedure was to standardize the performance of all interviewers, particularly during the beginning of the field work. The field supervisors gave advice and checked field notes. In addition, the supervisors accompanied interviewers regularly on data collection visits. Weekly workshops of the team members of each provincial team were held to discuss data, provide technical supervision, and plan for the next round of data collection. The standardization of the data collection of both teams was reinforced through the close contact of the field supervisors and through three workshops held by the Principal Investigator: one in Chaiyapoom and two in Chiangrai.

Table 2: Summary of methodologies used in the study

Phase/Methods	Technique/Instrument	Sample
Phase I Mailed questionnaire Survey	Questionnaire.	1,019 tambons in 8 provinces.
VDPP survey	Rapid appraisal; checklist; two structured questionnaires; and a record form.	8 provinces; 16 districts; 195 villages; 755 groceries; 96 VDFs.
VDF field-visit	Rapid appraisal; a structured questionnaire and a record form.	approx 400 villages having VDF from all tambons of 16 districts in the 8 provinces.
Phase II Household drug use survey	Questionnaire	577 households with school-age children; CR=283; CP=294)
Focus group discussion	Discussion Guide	15 female FGD; 6 male FGD(only in CP)
Observation of grocery shop	Observation guide	2 shops/village; small and large.
Drug sale record	Record form	2 shops/village.
In-depth interview	Interview guidelines	Key informants; village level=village leaders,VDF care takers, owners of grocery shop; health facility level= tambon health official, district health officer.

NOTES TO ANNEX 3:

1. The three villages were added because they are the same communities as those which were sampled. They are situated close to each other only there is a small road in-between; they used to be the same village but were later divided into separate villages by local authority for administrative reasons.

2. In practice, this information was recorded only for newly found drugs. For the frequently found ones, the information collected was only registration number, trade name, and expiry or manufacturing date.

3. The sampling frame can be summarized as follows:

Level	VDPP survey	VDF field visit	Case studies
Province	8 provinces (CR; UT; CP; MH; AT; PJ; CPN; SK)	8 provinces (CR; UT; CP; MH; AT; PJ; CPN; SK)	2 provinces (CR; CP)
District	2 districts/provinces; total=16 districts	2 districts/provinces; total=16 districts	1 district from each province (1 from CR; 1 from CP)
Tambon	3 tambons/districts; (n=48 tambons or 6 tambons/province	All tambons in the 2 districts having VDF village	2 out of the 3 tambons/district (2 in CR; 2 in CP)
Village	4 villages/tambon (total=195; 3 were added later)	All villages in the 2 districts having a VDF. (n=approx. 400)	4 villages/tambon (8 in CR; 8 in CP)

4. One village in Chaiyapoom was dropped after data collection had been carried out during four weeks. A field worker was found not to be qualified enough to continue her work. The field supervisor decided to exclude all relevant data from the analysis as it could affect the quality of data.

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