DETERMINANTS
AND POLICY IMPLICATIONS
OF DRUG UTILIZATION
IN THE PHILIPPINES

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

DETERMINANTS AND POLICY IMPLICATIONS OF DRUG UTILIZATION IN THE PHILIPPINES

*Ma. Cristina G. Bautista**

I. INTRODUCTION

The drug question has emerged as the central issue from which current health concerns in the Philippines are hinged on. With the formulation of the National Drug Policy and the legislation on the Generics Act, the supply of appropriate drugs --those of the right kind, quality and quantity which can be sold at reasonable prices--has been a key strategy of the government's health program. The highly charged discussions that accompanied the passage of the Generics Act into law indicate that the reorganization of the drug supply system to meet the people's needs is by no means an easy task.

Much of the arguments have focused on the gap between the health needs of Filipinos and existing systems of pharmaceutical development, promotion, marketing and distribution. Yet, while much is known about the latter in the works of Gabunada (1983), Sepulveda and Meneses (1980), and Kintanar and Chanco (1979), discussions on household utilization of pharmaceuticals have received scant attention (Hardon 1987). Studies on pharmaceuticals have concentrated on the supply side or the industry level and little is known about the demand side. A study on drug consumption behavior is necessary to anticipate the likely effects of policies on the users. While policies are seen as regulations on the industry and the prescriber, it is private or household consumption patterns that are of interest in terms of welfare. The decision algorithm of households in relation to pharmaceuticals provides insights into general household health-seeking behavior.

The ultimate objectives of rationality and efficiency in medicine use should spring from an understanding of how and why medicine is used. As such, knowledge about prescriber behavior

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is also essential. Even if one were to control the factors or socioeconomic characteristics affecting drug use, differentials in use attributed to physician characteristics would remain (Rabin and Bush 1974). The prescriber's influence needs to be examined, especially in the context of the appropriateness of drug utilization.

It is in this overall context that this research on drug utilization was undertaken. Specifically, the study addresses the following questions: 1) What are the determinants of private/household drug utilization in the country? 2) What aspects of prescriber behavior influence current drug utilization patterns? 3) How can policies affecting the supply and distribution of drugs affect drug utilization?

Aside from the sample survey of households and prescribers, the study also examines aspects of drug supply and distribution from the broader picture of the pharmaceutical market. The analysis provides a link to the policy options presented in the last chapter.

This report is organized into four parts as follows: the first discusses the framework and results of the study on household drug utilization; the second presents the framework and results of the study on physician prescriber behavior; the third provides a brief overview of macro issues affecting drug use and supply; and the last examines the policy implications of the study.

A. *Starting Points*

The analysis on patterns of drug utilization begins with an examination of the nature of the product. Medicines have properties that make it unlike any other commodity. First, unlike other consumer goods, the demand for drugs is derived. It is not bought for its own sake but for what it can do to alleviate pain or promote good health.

Second, while the choice of output, which is better health, is clear, consumer knowledge on the type of drug to purchase is generally inadequate. A consumer needs to consult a physician first before making a purchase. In a sense, there is no direct consumer control over the purchase of drugs. It is the physician, by virtue of his training and prescribing authority, who becomes the principal decision-maker and dominates the demand for drugs (Leifman-Keil 1973). Drugs which require prescribing authority are called prescribed medicines.

Third, medicine forms just one of the many inputs to better health, which include physician services and hospital treatment, among others. While medicine complements other health care activities, there may be some substitutability involved. Instead of seeking primary health care assistance from a prescriber, the consumer may directly purchase medicines. Drugs purchased without prior prescription are called nonprescribed or over-the-counter drugs.

These unique properties of drugs create implications for drug utilization. Incomplete information leads to some adverse selection problems wherein the exact quality and quantity of the commodity to be purchased is unknown. Such situation may lead to under- or overconsumption and inapplicability to ailments, among others. While prescribers may influence actual purchase, they do not carry the burden of shouldering the costs of purchase. Consumer ignorance and the hazards associated with providers' competence make the problem of choice in the pharmaceutical market a costly enterprise.

Producers (drug companies) provide a wide range of choices for the consumers and prescribers to choose from. They possess complete knowledge of their products and protect that knowledge with patents and trademarks. As sellers, demand for their products may come either directly from consumers (for proprietary or over-the-counter drugs) or from prescribers. Drug companies and prescribers enjoy a unique relationship.

The government's role is to provide the legal framework in which choices in the pharmaceutical market can be made. Its main concern is to ensure that the products are safe and are used for the purposes indicated. But the government is in a unique position because it is both producer and prescriber, by virtue of the drugs it purchases and makes available to patients of its health units.

These considerations signify that there exists certain appreciable differences in drug utilization, depending upon the interaction of consumers with the market and the prescriber. Household drug utilization, approached from the perspective of consumer behavior, arises from variables ranging from perception of need and attitude toward medicines to socioeconomic/demographic background and supply of health service resources.

Household-physician encounters resulting in a prescription provides insights into the quality of drug utilization. The other approach to drug utilization is prescriber behavior. The latter refers to the influence of factors like personal background, attitudes, patient characteristics, and conditions of practice.

These starting points provide the purview of the subsequent discussions.

II. DRUG UTILIZATION AMONG FILIPINO HOUSEHOLDS

This chapter examines drug utilization and its determinants from the perspective of a household. It presents a model of drug utilization at the household level and tests this model using the results of a survey conducted among 270 sample households drawn from the country's urban and rural areas.

A. *Framework of Analysis*

The analytic objective of a study that seeks to understand the patterns of using medicine is one of explaining a behavior. The starting point is the people's perception, rather than some objective and clinical assessment, of their state of health. The extent to which perceived need is expressed as a demand for drugs is the subject of this study. Effective demand for drugs is simultaneously interpreted as utilization of drugs. The basic approach is that of consumer behavior, wherein perception of need, socioeconomic/demographic factors, availability of health resources and attitude toward medicine underpin the framework of analysis (Figure 1).

Drug utilization is both a volume and a value concept. This study follows the first concept, which is similar to that used in the study of Kohn and White (1976). Volume of medicine use refers to the number of different kinds of medicines taken by households over specified conditions and time periods.

Figure 1
A Model of Drug Utilization
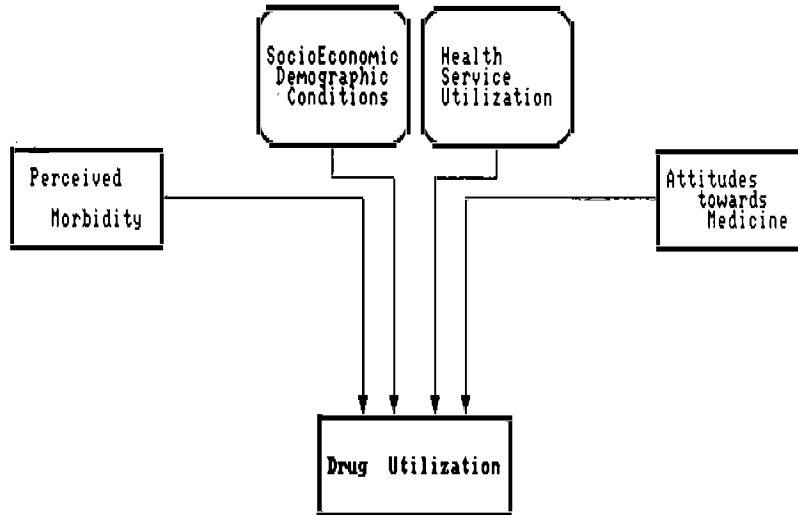
Figure 2
Total Medicine Use Classified by Major Therapeutic Class
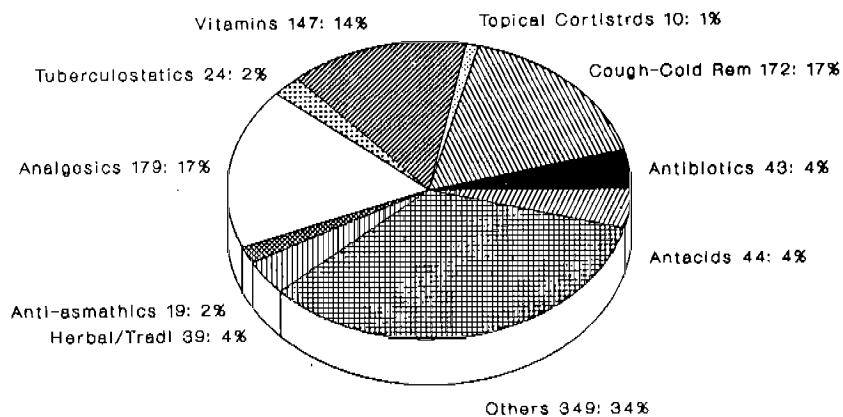
Perceived morbidity is the factor that urges one to decide whether to seek medical care or not. As earlier mentioned, no assumption is made regarding the true or clinically confirmed state of health. Perceived morbidity refers to any of the following states: restricted activity, severity (state of being bed-ridden) and chronicity accompanied by discomforting symptoms of pain and worry. Attitude toward health in general also determines the extent one may turn perception into effective demand for medicine. Perception of need must be of such severity to warrant concern and action.

Studies cited in Kohn and White show a direct relationship between perceived morbidity and prescribed medicine use. The same study cites inconsistent associations between levels of medicine use and perceived morbidity. It notes, for example, that one area reporting a large number of persons who perceive themselves to be ill also report heavy use of prescribed medicine.

Demographic determinants, such as age and sex, also explain variations in use. The literature confirms increasing use of drugs with age, with persons aged 65 and above consuming ten times more than persons belonging to the 15-34 year-old age group. The variation in use of prescribed and nonprescribed medicine was also the subject of an inquiry in Australia (Bureau of Industry Economics 1985). The study shows a high use of nonprescribed medicine among 44 year-olds, with a switch occurring beyond age 40. However, heavy over-the-counter drug users are predominantly under 40. It also notes that women are heavy users of nonprescription drugs. Other sources cite heavy use by women of prescribed medicines.

Socioeconomic factors of interest are family income and education. In a system where people pay directly for pharmaceutical services, the amount of family income should directly influence drug purchases. Families who are better educated and earn higher income can afford more medicine. However, they may also be more healthy and rational users such that they may exhibit lower consumption levels. This is confirmed in a number of countries, as cited in Kohn and White.

Health insurance reduces financial barriers to health care. Greater consumption in the presence of health insurance is expected. However, its use in the country is still limited.

The kind and quantity of medicine purchase also depend on the nature of consumer interaction with the health care system. The organization of general or primary health care services in an area determines to a large extent the pattern of health service use. This is critical in view of the need for prescribing authority in the purchase of some types of medicine.

Having a regular source of health care may induce more contact with a physician, hence, greater use of medicine. As the number of contact with a physician increases, drug consumption, following propensities to prescribe among physicians, also increases. The findings in international study reported in Kohn and White and Rabin and Bush indicate contact with a physician as a significant predictor of prescribed medicine use. However, data from Australia (Bureau of Industry Economics) reveal otherwise.

Also included under this set of variables are the sources of information about drugs. Those who have more access to periodicals and other forms of media are likely to be influenced by drug advertisements.

The choice of health care system sought upon perception of illness and the extent to which self-medication may substitute physician contact depend upon the accessibility and attitude toward health service systems in general. The presence of pharmacies and health care personnel other than physicians may create variations in drug utilization. Self-medication is widespread (Hardon 1987) and it substitutes physician contact, especially in areas where there is no regular doctor or when previous experience with the doctor is not satisfactory. Traditional practices still play an important role, especially in the rural areas.

B. *Methodology*

The basic study design is a survey, with households and individual users as the units of analysis. The household is considered a major unit of analysis because it is the basic spending unit when it comes to the purchase of goods and services. Health care decision-making is best viewed from a household's perspective since it is the household which maximizes welfare, subject to the constraints and opportunities defined by its endowments (Herrin and Bautista 1989). For Filipino households, health care decisions are family decisions. The female household head is usually responsible for every member's health since health expenses are taken out from the family purse which she holds.

The individual user as a unit of analysis also provides meaningful insights into questions on anxiety and other aspects of perceived morbidity as they relate to drug use. The nature of the relationship is further postulated to be subject to household decision-making in the context of its socioeconomic characteristics.

C. *The Survey Design*

The survey covered both rural and urban subsamples. The communities were chosen on the basis of personal contacts and varying proximities to vital centers of commerce and government. All in all, three urban and four rural barangays (the smallest unit of government) were chosen.

After identifying the communities, sampling was carried out in two stages: first, a cluster sampling then a random sampling of households. Prior to the selection of sample respondents in each study area, two types of information were obtained from barangay or health officials: a map and the number of households in the area. In cases where no maps were available, area layouts were illustrated in close consultation with the officials or area contacts. The areas were divided into clusters, often coinciding with barangay zones. Clusters were numbered and "raffled-off" to the interviewers. At the onset, the interviewers were limited to ten households or a maximum of five households in each cluster.

With the sample cluster, the interviewers located the cluster's center spot and chose the household immediately to the right as the starting point of the sample household selection process. Moving right symmetrically from the first sample household, they then chose the succeeding respondents at a one-house interval from the last house sampled. In cases where the area sub- divisions were not well-defined, particularly in dispersed or overcrowded communities, interviewers were asked to follow a nonlinear pattern wherein the households chosen did not just come from one cluster.

Only one respondent from each household was interviewed--the household head or his spouse or a responsible adult member. Since the interviews were conducted in the respondents' homes, details regarding use by one individual were ascertained from the individual himself.

Surveys of this type invariably have more low-income than well- off respondents. The former are more congenial and accessible to interviews. To provide a basis for comparison, a separate survey was conducted for rich households. Respondents were chosen from among the households of students of the elite school Ateneo de Manila University. However, the interview, using the same questionnaire, was self-administered. In a sense, the response may not be directly comparable. In the analysis, data from rich households are shown just to highlight certain issues.

Community-level data were also gathered to determine community health service systems, for instance, the availability of health clinics (private or public), pharmacy and health personnel other than doctors, including traditional healers. In areas where such services are available, household respondents were noted to be no farther than 30 minutes away.

Household medicine use was examined in two ways: in relation to specific conditions and in relation to drug types. Regarding specific conditions, medicine use was investigated for any of the following conditions during the past year: cough with phlegm, chest pains, shortness of breath, and pain in the joints. Regarding drug types, information on the use of any of the following drug types for the past month were gathered: pain killers, cough, colds, skin and stomach remedies, sleeping pills, tranquilizers, vitamins, medicine for certain heart conditions, contraceptives and others.

Along with the information on use, details were also asked regarding visits to the physician for the past month, if medicines were prescribed during these visits, hospitalizations (other than giving birth), number of sick family members during the past month, sources of information on drugs (other than the physician), preventive care and socioeconomic data.

D. *Analytical Tools*

The model was tested using multiple regression analysis and multiple classification analysis (MCA). The latter was first brought the author's attention by the international study of health care utilization described in Kohn and White. Given certain behavioral and other variables expressed in more than one category, the MCA served as an appropriate tool for analysis. It follows an analysis of variance procedure but yields estimates of regression coefficients. Unlike multiple regression techniques, even variables measurable on interval scales have to be collapsed into a smaller categories. The software utilized, though, could accomodate only a maximum of ten independent variable entries.

E. *Results and Discussions*

Patterns of Drug Utilization. Table 1 shows the distribution of our respondent households by study sites. Rural households comprised 55.9 percent of the sample and urban households, 44.1 percent. Rich households comprised only 7.4 percent of the total number of respondents.

The extent of household medicine utilization is shown in Table 2. Prescribed medicines comprise a larger percentage of total medicines used. More urban households use prescribed

Table 1: Distribution of Household Respondents by
          Study Sites

Areas:	Number of Households	Percentage
Navotas	39	14.4%
Las Pinas	26	9.6%
Quezon City	34	12.6%
"Rich"	20	7.4%
Total Urban Sample	119	44.1%
Tarlac	30	11.1%
Pampanga	41	15.2%
Nueva Ecija	30	11.1%
Laguna-Cavite	50	18.5%
Total Rural Sample	151	55.9%
TOTAL SAMPLE HOUSEHOLDS:	270	100.0%

medicines than rural households. The rate of household drug consumption is 6.5, 4.4 and 6.0 for urban, rural and rich households, respectively. The difference in the rate of use between prescribed and nonprescribed medicine is not substantial in rural households, unlike in the two other household types.

The widespread use of prescribed medicine may be contrary to expectations. Total medicine use was asked in two contexts: one, in relation to the four conditions and the other, in relation to drug types. Regarding drug use in relation to the four conditions, drug-use information followed the question on the use medical personnel. Afterward, the respondent was asked if the medicine named was prescribed by any of the medical personnel. References from nonmedical personnel were not considered as prescribed. Better recall for condition-related use is expected. However, the use of a one-year recall period may account for certain slippages of memory. A longer recall period seems justified in the context of specific health conditions. However, the question on health service or personnel utilization would provide appropriate checks. Regarding drug use in relation to drug types, the phenomenon of repeat prescription (previous prescription used for recent purchase) has not been thoroughly delved into. But as in the first situation, references were asked regarding the source of prescription. However, certain cultural biases that may prompt some to respond in what they expect to be the correct answer--that medicines should be prescribed--could not be discounted.

Furthermore, the results should not be construed as implying greater access to health services or personnel. It is possible that due to the longer recall period, a visit may have occured considering that drug use was related to specific ailments. With the relative poverty in most of the study sites, medical missions conducted by charitable institutions are possible.

The breakdown of total medicine use by therapeutic class is shown in Fig. 2. The "Othersd" category is the biggest grouping. It includes medicines inadequately named, as well as home or herbal remedies. Analgesics form the second largest grouping of household medicines used, followed by cough/cold remedies.

Drug consumption for the past month for 10 specific categories of medicinal substances is shown in Tables 3 and 4. For prescribed medicine use, 56.6 percent of urban households use vitamins, followed by cough medicines and pain relievers. Rural households, on the other hand, purchase more vitamins, cough and stomach remedies. Vitamins surface as the prescribed item purchased the most by the cross-section of households. This provides a clue to prescribing patterns.

For nonprescribed medicine use, 38 percent of urban households use pain killers, skin ointments and cold remedies. On the other hand, 48 percent of rural households buy pain killers over the counter, followed by skin ointments and cold remedies. Cold relief medicines, followed by pain killers and cough medicines, are the major over-the-counter purchases of rich households.

Physicians are the major source of drug information (56 percent of all medicines used for the past month) for households, followed by friends and relatives (15 percent). Self-prescription knowledge, drugstore personnel and advertisements form the other major sources of drug

Table 3: Distribution of Households Reporting
Prescribed Medicine Use by Category of Medicine
Past Month, in Percent

Area	Pain	Cough	Colds	Skin	Stomach	Sleep	Tranqzrs	Vitamins	Heart	Birth Control	Others
Navotas	28.2	46.2	20.5	12.8	23.1	2.6	7.7	41.0	15.4	5.1	-
Las Pinas	19.2	38.5	26.9	20.8	30.8	3.8	3.8	69.2	7.7	15.4	3.8
Quezon City	26.5	55.9	20.6	32.4	14.7	-	2.9	64.7	11.8	5.9	8.8
Tarlac	6.7	16.7	6.7	3.3	6.7	3.3	-	33.3	16.7	3.3	6.6
Pampanga	7.3	24.4	2.4	9.8	14.7	-	-	22.0	17.1	2.4	2.4
Nueva Ecija	6.6	16.7	3.3	3.3	23.2	-	-	33.3	30.0	-	6.7
Laguna-Cavite	20.0	20.0	14.0	2.0	12.0	-	-	12.0	-	2.0	-
Urban	25.3	47.4	22.2	24.2	22.2	3.0	5.0	56.6	12.1	8.0	4.0
Rural	11.3	19.9	7.3	4.6	13.9	...	-	23.2	13.9	2.0	3.3
Rich	30.0	30.0	10.0	20.0	35.0	5.0	-	35.0	30.0	-	-

Table 4: Distribution of Households Reporting
Non-Prescribed Medicine Use by Category of Medicine
Past Month, in Percent

Area	Pain	Cough	Colds	Skin	Stomach	Sleep	Tranqzrs	Vitamins	Heart	Birth Control	Others
Navotas	30.8	7.7	20.5	33.3	12.8	2.6	2.6	12.8	2.6	-	-
Las Pinas	38.5	15.4	42.3	34.6	15.4	-	-	3.8	-	-	3.8
Quezon City	47.1	14.7	17.7	29.4	20.6	-	-	14.7	-	-	8.8
Tarlac	63.3	23.2	13.3	23.3	30.0	-	-	6.6	-	6.6	6.6
Pampanga	68.3	22.0	34.1	22.0	29.2	-	-	19.5	-	2.4	2.4
Nueva Ecija	53.3	20.0	30.0	33.3	6.7	-	-	16.7	-	3.3	6.7
Laguna-Cavite	20.0	10.0	14.0	26.0	6.0	0.02	-	10.0	0.02	-	-
Urban	38.3	12.1	25.3	32.3	16.2	1.0	1.0	11.1	1.0	-	7.1
Rural	48.3	17.9	22.5	25.8	17.2	...	...	13.2	...	2.6	2.6
Rich	35.0	35.0	40.0	15.0	15.0	-	-	30.0	5.0	-	5.0

Legend:
- Zero Use
... Less than 1%

information (Fig. 3). Self-prescription knowledge is defined as previous experience with the drug under consideration.

The various sources of drug information are shown in Table 5. Advertisements and drugstores show similar patterns of distribution among medicine types. Drugstores are the direct source of information on sedatives, tranquilizers and contraceptives. Information on medicine for skin ailments largely come from traditional sources.

Perceived Morbidity and Use. In terms of morbidity profile, the sample households are fairly well-distributed across the categories namely: handicap/ disability, chronic or recurring ailments, indicator complaints (chest pains, cough and phlegm, shortness of breath and joint pains), hospitalization and illnesses other than the four complaints suffered during the past month.

Table 6 shows the distribution of households among these categories. If the table indicates the health status of the sample population, then morbidity conditions in urban areas are much worse than in the rural areas for all categories except disability. Only slightly more than one third of the rich households reported getting sick for the past month. Most of them reported one or two of the four indicator conditions.

The rate of medicine use according to health status is shown in Table 7. A fourth to a fifth of the total number of medicines used by all household respondents have been used for any of the four complaints. Residual intake refers to the ten medicinal substances (for cough, pain, etc.). Medicine intake for "healthy" households which reported no sick member for the past month indicates the use of medicines for preventive care. When the total medicine intake for the four complaints was summed up and divided by the total number of households which reported suffering any of the four complaints, figures yielded medicine use of 1.6, 1.5 and 1.0 for urban, rural and rich households, respectively.

Focusing on persons with complaints, the rate of use by morbidity levels shows that some persons suffering from the conditions identified do not have the benefit of pharmaceutical treatment. This is shown by the less than one correspondence between total medicines used for the four complaints and total number of persons with complaints (Table 8). There are still ill people in the rural areas who do not have the benefit of medicines, especially those suffering from ailments of moderate severity. Compared to urban areas, rural areas have lower rates of medicine use per person for each morbidity level.

Socioeconomic/Demographic Factors. In terms of age and sex of user, the rate of medicine use is higher for men than women in almost all areas (Table 9). Less than one correspondence between total medicines used and number of complainants by sex is more common for female than male adults. Female children in urban areas have higher use rates than their counterparts in rural areas. Per person use of medicine is higher for male than female children in the rural areas.

The per capita use of medicine by sex and age structure can indicate if there is a tendency towards polypharmacy (excessive medicine intake or over-prescription). Results show that every complainant takes at least one medicine for an ailment. The appropriateness of use cannot be verified.

Figure 3
Distribution of Drug Information Sources for Households

Presc by Dr. 567: 55%

Not Indicated 21: 2%

Drugstore 83: 8%

Self Prescribed 91: 9%

Friends/Family 165: 16%

TV/Media 78: 8%

Others 25: 2%
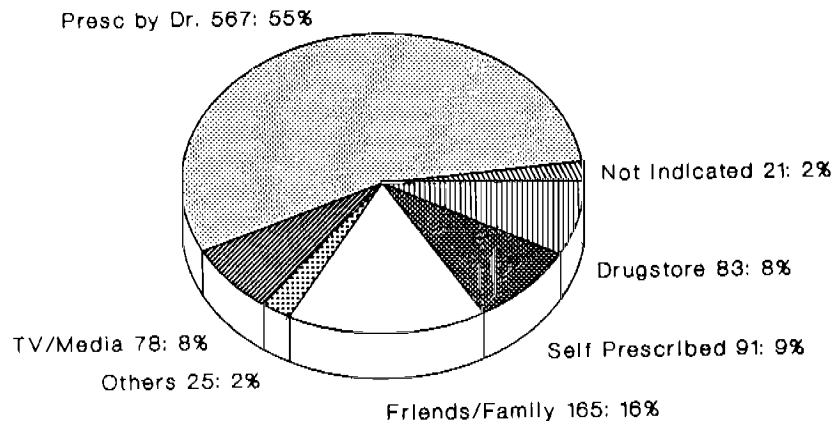
Figure 4
A Model of Prescribing Behaviour

Patient
State of
Ill-Health

Personal
Backround

Conditions of
Practice

Patient
Characteristics

Medical
Parameters

Diagnosis

Drug
Prescription

Physician Characteristics

Moderating
Factors
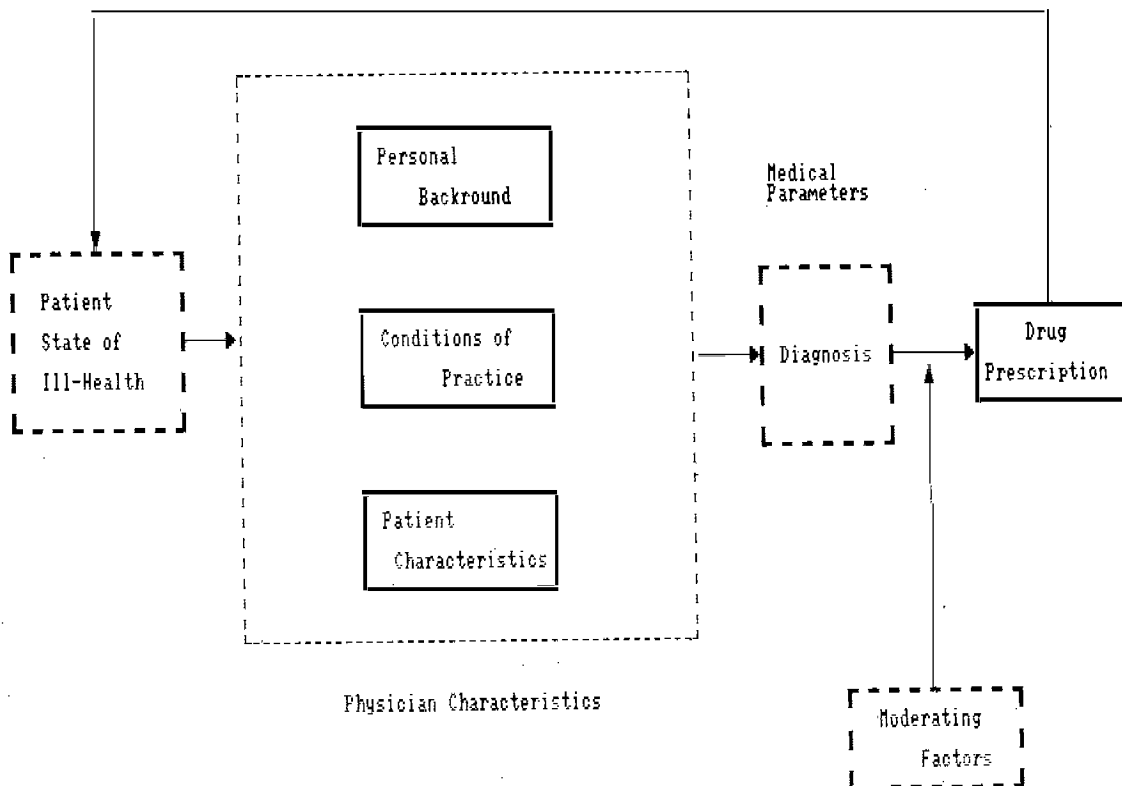
Table 5:   Sources of Drug Information

Type of Medicine	Not Inducted	Presc by Dr.	Media	Albu-laryo	Agent Sample	Friends Family	Self Presc	Drug Store
Pain Relievers	1	71	37	1	0	51	33	22
Cough	2	114	12	3	0	19	9	8
Cold	3	42	14	1	0	23	17	13
Skin	6	47	13	7	4	33	17	13
Stomach	0	75	3	4	0	20	10	14
Sedatives	0	5	0	0	0	0	0	2
Tranquilizers	0	5	0	0	0	0	1	0
Vitamins	8	140	8	3	2	16	3	10
Heart/Blood	1	55	0	0	0	1	1	0
Contraceptives	0	13	1	0	0	2	0	1

Table 6:   Distribution of Households in
Morbidity Categories (in percent)

Area	Handicap/ Disability	1/ Chronic Complnt	2/ Four Complnt	3/ Hosptlzn	4/ Sick
Navotas	7.7	53.8	94.9	61.5	53.8
Las Pinas	7.6	38.5	80.8	69.2	80.8
Quezon City	8.8	17.6	76.5	38.2	23.5
Tarlac	16.7	20.0	80.0	36.7	33.3
Pampanga	14.6	17.1	73.2	31.7	29.3
Nueva Ecija	16.7	36.7	43.3	33.3	33.3
Laguna-Cavite	14.0	32.0	76.0	40.0	28.0
Urban	8.1	37.4	84.9	53.6	50.5
Rural	15.2	28.5	76.2	36.4	31.1
Rich	10.0	5.0	25.0	20.0	35.0

1: Defined as a long-standing, recurring ailment.
2: Percentage of families with at least one member
   complaining of cough and phlegm, pain in the
   joints, chest pains and shortness of breath
   for the past year
3: Reference period: 3 years, hospitalization
   not related to childbirth
4: Defined as not feeling well for the past month

Table 7: Percentage of Medicine Used
by Health Status Categories

Area:	%	Total Med Used	% for 4 complnt	% for Healthy	*Residual
Navotas	100	226	33.2	3.1	63.7
Las Pinas	100	163	16.6	13.5	69.9
Quezon City	100	215	14.9	17.2	67.9
Tarlac	100	133	27.9	16.5	55.6
Pampanga	100	208	20.7	21.2	58.1
Nueva Ecija	100	157	27.4	28.0	55.4
Laguna-Cavite	100	159	30.2	9.4	60.4
Urban	100	644	20.8	10.2	69.0
Rural	100	661	25.9	15.9	58.2
Rich	100	119	4.2	68.1	27.7

* Did not suffer from any of the four conditions and
answered "No" to the question 'Is there any household member who
stayed at home during the past month because he did not feel
well?

Table 8: Rate of Medicine Use of Persons by Indicator
Condition and Morbidity Levels

Indicator Conditions	Restricted Activity		Stay in Bed	
	Urban	Rural	Urban	Rural
Cough & Phlegm	1.4	1.4	1.4	1.3
Chest Pains	1.0	0.8	1.1	1.1
Joint pains	1.0	0.8	1.0	0.9
Shortness of Bre......	0.6	0.5	0.7	0.6

Table 9: Medicine-to-Person Rate of Use.
by Male/Female and Adult/Child

Area	Female Chldrn	Female Adults	Total Females	Male Chldrn	Male Adult	Total Male	TOTAL
Navotas	1.3	1.4	1.4	1.2	1.2	1.3	1.6
Las Pinas	1.2	1.1	1.2	1.0	1.0	1.2	1.1
Quezon City	1.3	0.5	0.7	1.5	1.5	1.4	1.0
Tarlac	2.0	0.9	1.2	1.2	1.2	1.3	1.4
Pampanga	0.6	1.1	0.8	4.0	1.0	1.3	1.3
Nueva Ecija	1.6	1.3	1.4	3.0	1.4	1.8	1.7
Laguna-Cavite	1.8	0.8	1.0	0.5	0.9	1.4	1.6
Urban	1.3	1.1	1.2	1.1	1.3	1.3	1.3
Rural	1.5	1	1	1.8	1.1	1.5	1.5

Table 10: Percentage Distribution of Medicine Use by Type.
By Educational Level of Household Head

	% of HH Respondts	% of total Med Used	% of Presc Med Used	% of Nonpresc Med Used
Primary	48.1	48.2	49.3	46.7
Secondary	27.4	27.7	25.6	30.5
Collegiate	14.1	14.9	16.0	13.5
Vocational	4.8	3.7	4.4	2.8
No grade reported	5.5	5.4	4.7	6.5
		100%	100%	100%

Use of Prescribed and Nonprescribed Medicines
per Educational Level

	Primary	Sec'ndry	Collgte	Voc'l	No Grade
Prescribed	58.9%	53.3%	61.6%	67.9%	49.4%
Nonprescribed	41.2%	46.7%	38.4%	32.1%	50.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

The differential in male-female use rates is interesting because it contrasts with observations in the literature. That the medicine needs of men are met more than that of women may be due to the cultural perception that their needs are more important, men being the family breadwinner. Thus, any absence from work due to sickness may cut down family income. The household simply cannot afford a sick breadwinner.

Differences can also be attributed to morbidity differentials between the two sexes. Work outside the home may expose men to more health hazards. However, data reveal that although more men have complaints compared to women, the difference is small. For the four conditions, male complainants exceed the number of female complainants in all categories except shortness of breath. Many of the women's complaints on shortness of breath may be a cause for mild concern.

The rate of drug utilization by educational level of household heads is shown in Table 10. The use of drugs shows no marked difference across all educational levels. The distribution is skewed in favor of prescribed medicine, except for those who did not report a schooling level. The lowest overall rate of use was registered by households headed by vocational school graduates. Households headed by primary school dropouts or graduates have higher rates of medicine use.

In terms of income, the poorest groups, also the largest, account for 62 percent of total medicines used (Table 11). The higher income groups, though smaller in number, account for a greater percentage of total medicines used. It is worth noting that most of those who did not report their incomes are from the rich household samples. If medicine is to be considered a resource or input to better health, then there seems to be an uneven distribution of it. Taken in the context of the results on per capita use, this distribution pattern confirms that the poorer groups, with more complainants, have less access to medicine. Although it cannot be verified if each complainant does need medicine use, since no clinical examination has been taken.

However, from the profile of use (shown in Tables 3 and 4), vitamins was widely prescribed to both groups indicating preventive use. As a percentage of total medicine use, the use rate of those who did not report income and the middle-income earners shows a skewed pattern in favor of prescribed medicine. For nonprescribed medicine use, the rich tend to use more cold and cough remedies, while the poorer ones tend to use more pain relievers. This connotes some degree of substitutability, with medicine substituting for other forms of therapy, such as physician consultation and the like.

Health Service Availability and Use. No clear pattern emerges when health service use is related to drug consumption. Table 12 shows that urban areas, which have the largest percentage of families with physician contact for the past month, have higher medicine use rates than rural areas. On an area basis, both Navotas and Quezon City have high medicine use rates. However, Navotas has the second highest physician contact rate, while Quezon City has the second lowest.

More households have drugstore or pharmacy contacts. Between urban and rural areas, a larger percentage of urban households have drugstore contact, similar to the patterns shown for physician contact. The area which showed the highest pharmacy contact has the second highest medicine consumption. No clear relationship is shown between drugstore contact and the number

Table 11: Percentage Distribution of Medicine Use by Type
by Annual Income Class

	% of HH Resp	% of total Med Used	% of Presc Med Used	% of Nonpresc Med Used
No Income Reported	2.9	4.8	6.3	2.8
P 36,000 down	67.8	62.0	60.1	64.7
P 37,000 - 90,000	21.5	23.3	23.9	22.5
P 91,000 up	7.8	9.8	9.7	9.9
	100.0	100.0	100.0	100.0

	No Income Reported	P 36,000 down	P 37,000 to P90,000	P 91,000
Prescribed	75.6%	55.8%	59.0%	57.1%
Nonprescribed	24.6%	44.2%	41.0%	42.9%
Total	100.0%	100.0%	100.0%	100.0%

Table 12: Health Service Attributes and Use

Area	Number of: Health Centers	Number of: Pharma- cies	Percent of Families with: Health Insur.	Percent of Families with: Physician Contact	Percent of Families with: Pharmacy Contact	Rate of Use of Med.
Urban:						
Navotas	2	3	2.6	25.6	84.6	5.8
Las Pinas	2	3	23.0	38.5	96.8	6.3
Quezon City	8	4	67.7	8.8	74.5	6.3
Rural:						
Tarlac	2	0	16.7	13.3	90.0	4.4
Pampanga	3	2	14.6	17.1	68.3	5.1
Nueva Ecija	3	1	6.7	16.7	80.0	2.3
Laguna-Cavite	5	4	3.6	6.0	74.0	3.2
Urban	19	6	24.4	23.2	82.3	6.5
Rural	6	8	10.4	13.2	76.8	4.4

of drugstores in an area. It is important to note that what are referred to as pharmacies are really just drugstores.

That more households reported more pharmacy use than physician contact indicates substitutability between pharmacy and physician contact. The extent to which the most recent physician contact resulted in a prescription cannot be directly verified.

Data on health insurance show that it comprises only 24 and 11 percent of urban and rural households, respectively. The insurance system referred to is the Medicare program for government (GSIS) and private (SSS) employees. Only 45 percent of rich households reported having medical insurance. These small prcentages prompted the author to place health insurance as a health resource, rather than a socioeconomic factor, which complements income. Furthermore, health insurance is only meaningful if it features hospitalization benefits which allow the reimbursement of drug purchases.

Attitude. The objective for this part of the study is to gain an attitudinal profile of the respondents. While no direct links have been established between drug use and attitudinal variables, the distribution of responses to certain variables provides insights into our respondents' valuation of medicines or physicians, as well as their health-seeking behavior. Certain statements reflecting physician-related perceptions and utilization behavior were presented to the respondents, requiring a "yes" or "no" reply. The responses in Table 13 reflect a fairly typical outlook toward doctors and medicine use. The respondents are fairly well-aware of the advantages of modern medicine (#1), respectful of and dependent upon doctor's opinions (#2-4, 7), yet discerning of their physicians(#5-6) and medicines (#8) or even independent (#9-10). Their responses may be linked to their socioeconomic background, as well as experiences with the health care system in general.

The following points are worth highlighting for their implications on policy. More than two-thirds of the respondents do not believe that the cheapest drug is as effective as its expensive counterpart. There may be a problem with therapy compliance, with the respondents closely split on whether they should continue or discontinue use of medicine despite medical advice. There may be a need for an educational campaign on the role of doctors and medicines, since more than two-thirds of the respondents believe that doctors who do not issue prescriptions are less competent than those who do. This may provide a clue as to why doctors behave this way.

Determinants of Use. Medicine use is defined as the different kinds of medicines households reported they have taken for the four complaints, as well as for 10 medicine types. They were estimated for either individual or household use. The runs presented in this study comprise the best of the numerous estimates done. The ultimate concern is to present the estimates that validate the model used and at the same time present policy handles.

Initially, an MCA of the determinants of total medicine use by the household (for the four complaints and by medicine types) was undertaken. The variables identified in the model were included. Only four factors appear to be significant (presence of chronic complaints in the family, presence of illness, location and reliance on prescribed medicine over home remedies). The model explains only 19 percent of the variance. Morbidity is the most significant explanatory factor (Table 14).

Table 13: Attitudes and Behavior Profile

Statement	Percentages	
	Yes	No
1. Drugs doctors prescribe are better than home remedies.	82.9	15.5
2. Doctors should give details of what he is doing to you, the patient.	98.5	1.5
3. Following a doctor's advise will give one less illness in one's lifetime.	87.8	12.2
4. Do you doubt some of the things doctors say they can do?	11.5	87.8
5. It is best to try different doctors to find one who will give the best care.	58.5	40.4
6. Is it sometimes good to suggest treatments different from those the doctor prescribed?	34.4	65.2
7. When a doctor prescribes medicines, do you buy everything at once?	58.9	41.1
8. The cheapest drug is as effective as its expensive counterpart.	30.7	68.1
9. The person in the botica is just as good as the doctor.	15.2	83.7
10. When you start getting well, do you usually discontinue the use of prescribed medicine even if the doctor says you have to take a specified amount?	49.3	50.4
11. A doctor who does not prescribe a medicine upon consultation is not a good doctor.	75.9	23.3

Table 14: Proportion and Relative Importance of Variables
in Explaining Variance in Total Medicine Use
by All Respondent Households

Predictors	Proportion of Variance Explained	Relative Importance in Explaining Variance	Significance +
	Eta	Beta	
Morbidity Factors			
Recurrent sickness	0.23	0.13	**
Illness	0.27	0.29	***
Use Factors			
Doctor present in community	0.07	0.02	
Pharmacy in area	0.12	0.01	
Socioeconomic Factors			
Annual household income	0.13	0.08	
Educational level (housewife)	0.08	0.06	
Insurance	0.08	0.06	
Location:Urban Rural	0.22	0.12	*
Attitudes			
Faith in M.D.s	0.22	0.15	**
Compliance with treatment	0.06	0.03	

R squared: 0.192

+Significance levels: * at 10% ; ** at 5% ; *** at 1%

The variance in medicine use by individuals having any of the four complaints, as explained by another set of selected variables, is quite large (Table 15). This is shown by the high R squared. The variance in medicine use, as explained by the eta, is attributed mainly to morbidity and demographic factors such as sex. The corresponding beta coefficients indicate the significant role of sex of user in explaining the variance in utilization. In this case, women's consumption largely influenced the variance in use. Anxiety over a health condition is also a significant determining factor in medicine use.

Using similar sets of variables, the author sought to explain the variance in use by adults with any of the four complaints (Table 16). Although the explanatory capacity (eta) of the individual predictors is quite modest, they are well distributed among the variables. Health service factors, the presence of a pharmacy in the vicinity, and the availability of a health center contribute greatly in explaining medicine use among adults. Drug utilization and health service attributes complement each other. Anxiety and sex again emerge as important predictors.

The MCA provides a simple picture of the relationship between drug utilization and selected predictors. It is useful especially if the variables are categorical. But the software limited the author to ten independent variables. Beyond that multiple regression had to be used to capture the direction of influence of the factors, as well as their significance. Only the runs done for medicine use by medicine types were acceptable and fit for the model used and for strong policy implications. The choice of final variables were made after several trials. Only those which explain a greater proportion of the model are presented.

Table 17 shows the results of the regression analysis on the determinants of drug utilization for households. Location is highly significant in explaining total medicine use. Total consumption varies indirectly with urban use. An explanation for this may be related to the nature of morbidity conditions, as well as the relative poverty, in urban areas.

In all three areas, drug utilization varies directly and significantly with the proportion of prescribed to non-prescribed medicines. This variable shows the degree of influence of prescribed medicine use to overall household medicine use. Households which reported a greater share of prescribed medicines to total medicines used are likely to utilize more. This is probably because of greater valuation of the role of medicine in general since "authority" (prescriber) has confirms it. This view is supported by the significance of physician contact or doctor consultation for urban and overall use. Physician contact generally results in the issuance of a prescription. But in the rural areas, a significant explanatory variable is media contact. This is quite ironic considering that media exposure is greater in urban centers. The relative scarcity of physicians, as well as low educational levels, may account for high media influence among rural people.

The presence of a health center is generally significant. What is perplexing is that the presence of a drugstore negatively influences drug utilization. The variable "drugstore" refers to its presence in the community, not to utilization. The distinction between supply and utilization needs to be made. It is possible that more progressive areas have more drugstores but better health status, hence the lesser need for medicine use.

Household size, a demographic condition, is another significant factor in both urban and rural areas. The bigger the household size, the more medicines consumed. The more dependent

Table 15: Proportion and Relative Importance of Variables
in Explaining Variance for Individuals
with any of the Four Complaints

Predictors	Proportion of Variance Explained	Relative Importance in Explaining Variance	Significance +
	Eta	Beta	
Morbidity Factors			
Bed stay	0.76	0.37	
Anxiety	0.74	0.61	***
Health Service			
Pharmacy	0.12	0.11	
Health center	0.08	0.08	
Socioeconomic/ Demographic Factors			
Annual income	0.12	0.13	
Educational level (head)	0.22	0.09	
Sex of user	0.73	0.92	***
R squared	0.626		

+ Significance levels: * at 10% ; ** at 5% ; *** at 1%

Table 16: Proportion and Relative Importance of Variables
in Explaining Variance for
Individual Use of Medicine, by Adults

Predictors	Proportion of Variance Explained	Relative Importance in Explaining Variance	Significance +
	Eta	Beta	
Morbidity Factors			
Bed stay	0.09	0.07	
Anxiety	0.40	0.35	*
Health Service			
Pharmacy	0.09	0.44	**
Health center	0.13	0.55	**
Socioeconomic/ Demographic Factors			
Annual income	0.23	0.26	
Educational level (head)	0.26	0.32	
Sex of user	0.25	0.26	
R squared	0.438		

+ Significance levels: * at 10% ; ** at 5% ; *** at 1%

Table 17: . Drug Utilization Regression Results.
       Total Medicine Use for 10 Drug Types as Dependent Variable.
       Urban. Rural and All-Household Use

Variables	Urban	Rural	All-Household
% Presc to NonPresc	0.589 (2.804)***	0.910 (6.769)***	0.696 (5.798)***
Household Size	0.398 (2.177)**	0.198 (2.429)***	0.273 (3.191)***
Drugstore	-0.235 (-0.578)	-0.149 (-1.106)	-0.280 (-1.894)*
Work of HHead	-0.173 (-1.171)	0.110 (1.369)	-0.025 (-0.323)
Use of Media/TV as source	-0.564 (-0.724)	1.497 (3.309)***	0.456 (1.083)
Sick Member	0.976 (1.433)	0.300 (0.845)	0.577 (1.629)
Doctor Consultation	1.211 (1.716)*	0.466 (1.339)	0.758 (2.155)**
Mother's Education	0.198 (0.843)	-0.048 (-0.365)	0.125 (0.985)
No. of Working HMembers	0.156 (0.691)	0.192 (1.513)	0.138 (1.134)
Presence of Health Center	0.185 (0.912)	0.214 (1.267)	0.161 (1.669)*
Location: U/R	--	--	-1.218 (-3.257)***
Percent of HMembers Aged below 12	0.563 (0.213)	0.320 (2.079)**	0.133 (0.909)
Constant	2.234 (2.150)	0.316 (0.442)	3.559 (4.110)
D.F.	107	139	257
F-value	2.217	9.709	9.367
Adjusted R squared	0.10	0.39	0.27

(   ):T-values   *** sig. at less 2.5%, ** sig. 5%, *sig. 10%

children the household has, the greater the use, probably indicating the health status of the children.

F. *Concluding Remarks*

The determinants of household drug utilization are morbidity factors, health service supply, demographic conditions and certain attitudinal values. That socioeconomic factors do not significantly explain drug utilization only confirms the relative inelasticity of medicine consumption to changes in socioeconomic variables. Income and its proxies, like occupation of household head, number of working members and mothers' education, do not show any significant relationship with drug utilization.

The perception of need, expressed through some complaint or severity of condition, initiates medicine use because of the firm belief in its pain-alleviating properties, real or imagined. Health service supply, referring to health centers or drugstores, may merely facilitate the process. Utilization varies directly with women's patterns of use.

Data gathered for this study do not reveal strong tendencies towards polypharmacy. For every complainant, at least one medicine is injested for every ailment. While judgement is not made on the nature of complaints and the appropriateness of medicine use, this study shows that there exists some problems regarding access to essential drugs. There are needs that are not being met. The problem can flow from several sources. There may be economic barriers to medicine use, although this does not figure prominently in this study's results. Supply of medicines appropriate to health needs is also another source. People may purchase from what is out there. More importantly, there may be an information problem. The extent to which formal service units function as useful sources of information regarding modern medicine use needs to be examined. The quality of information from such sources needs to be assessed due to the presence of medicines of questionable therapeutic value, as well as source substitutes.

The significant effect of prescribed medicine consumption on overall consumption patterns highlights the discussion in the next chapter. Moreover, the predominant use of prescribed medicine appears contrary to expectations.

Policy assistance is thus needed in the following areas: improvement of drug selection; accessibility to essential drugs; educational campaigns on proper drug use not only for consumers but also for providers, including drugstore personnel; and the monitoring and regulation of the quality and reliability of information regarding certain therapeutic claims and proper prescription. These considerations are discussed in the last chapter in the form policy options.

III. PHYSICIAN CHARACTERISTICS AND PRESCRIBER BEHAVIOR IN THE PHILIPPINES

This chapter provides a model which describes prescribing behavior in the country. It presents a profile of Filipino physicians and examines how their characteristics--personal, practice- and patient-related--affect prescribing behavior.

A. *Conceptual Framework*

A number of studies have investigated prescribing behavior-- the quality and quantity of prescriptions--and its correlates. Most of these have been conducted from the perspective of a developed country. For example, Stolley and Lasagna (1969) cited marketing data which show prescribing patterns to be inefficacious, inappropriate for the diagnosed condition, or unsafe as prescribed.

Empirical investigations show results that warrant validation from the experiences of developing countries. Limited surveys in the Philippines show the prescribing habits to be inappropriate and often unnecessary (Tordesillas and Gutierrez 1981; Quijano et al. 1985). There is a need to examine the factors that result in such prescribing patterns.

The framework used in examining prescribing behavior is presented in Figure 4. This report discusses only the proximate factors and has nothing to say on the medical parameters, meaning the rightness or wrongness of the diagnosis itself. The latter is somehow reflected in the treatment advised as well as medication prescribed.

It is hypothesized that prescribing behavior is a product of the interaction of the proximate variables, composed of the personal characteristics of physicians, conditions of practice, and patient characteristics.

Prescribing behavior, mirrored in the drug prescription, is defined in two ways: a) the percentage with which a patient's visit results in a prescription, and; b) condition-related prescription. The first denotes the propensity of Filipino physicians to prescribe during outpatient consultations. The second examines the first choice drug for certain conditions: ORS for diarrhea, penicillin for sore throat, and NSAIDS for muscle pain. ORS and penicillin are generally considered acceptable choices for the treatment of diarrhea and sore throat, respectively. NSAIDS may be considered inappropriate for muscular pains on an outpatient basis. By examining the variables affecting the acceptability of drug therapy choices, insights into the quality of prescribing behavior are gained.

B. *Proximate Variables*

Personal background includes variables such as age and sex, quality of training, affiliation, attitude toward state policy and the drug industry, as well as perception of the role of pharmaceuticals in overall medical care. Older physicians are expected to prescribe more rationally and sparingly due to experience, not only in prescribing a specific drug but also with various treatment outcomes (Denig et al. 1986).

On the other hand, younger physicians may be more appropriate prescribers as a result of better pharmacological training and greater awareness of drug issues. Graduates of better quality schools would generally have better training in pharmacology. In a study of primary care physicians in the U.S., Stolley et al. (1972) formed a panel of expert judges to evaluate medical prescriptions. In their findings, they noted that the more appropriate prescribers tend to be the younger, more recent graduates with some postgraduate training. They possess a more modern and cosmopolitan attitude and are concerned with the quality and psychosocial, rather than

technical, aspects of medical care. They were found to be heavily reliant upon journal articles for drug information, more critical of the pharmaceutical industry, and more supportive of the government's role in regulating drug quality and costs.

Studies of prescribing behavior in three English towns were also cited, showing that low prescribing is attributed to high educational qualifications and peer association. Still other studies cited found prescribing rates declining as the age of the physician increased. Sex was found to be a significant predictor, with women doctors prescribing more often than men. The latter study did not control for content of practice between sexes (cited in Rabin and Bush 1974). In a study of prescribing behavior for psychotropic drugs, Hemminki (1974) found that the more positive the attitude of the doctor toward the use of drugs for social problems and everyday stress, the more he prescribed psychotropic drugs.

Conditions of practice refer to the physician's location of practice, his patient load per week, and time spent with each patient. In the Stolley article, physicians who spent less time with patients and had more extensive practice with ancillary assistants were found to be better prescribers.

The type of practice has also been found to affect prescribing. Rabin and Bush (1974) cited a study done in France wherein general practitioners were found to give higher percentage of prescriptions compared to consultant-specialists. They also cited another study where high prescribers were those who had higher rates of patient visits. Since it is commonly believed that a physician would look to the prescription as a polite way of ending a consultation, a greater propensity to prescribe would be expected for those with heavy patient load practices.

Drug-specific studies, like those conducted by Hemminki for psychotropic drugs and Gabe and Williams (1986) for tranquilizers, yielded interesting findings related to the effect of conditions of practice on prescribing behavior. Hemminki's study noted that the longer the surgery hours, the more psychotropic drugs are prescribed. He also observed that rural doctors prescribe more than doctors based in the towns. Gabe and Williams' study found tranquilizer prescription rates to be higher in urban than in rural areas.

Patient characteristics include capability to pay, patient- expressed preference for a specific drug, as well as probability of patient compliance. Denig et al. (1988) found in their empirical investigation that when medication is the only treatment option, patient demand may not figure on the decision to medicate. The same study by Stolley et al. showed that dissatisfaction among patients tend to be associated with better prescribing. The study postulated that poorer practices may have more inappropriate prescribers, but did not find the relationship to be statistically significant.

Moderating factors refer to factors beyond the physician's control. These include availability, other forms of therapy for the same conditions, and social environment. This study focuses on the role of the proximate factors in prescribing behavior.

C. *Methodology*

A survey was conducted among medical practitioners based in and outside Metro Manila. Private general practitioners were the main targets of the survey. However, physicians with specialty training but involved in general practice were also included.

A questionnaire served as the standard instrument. It was designed to elicit information on:

a) Personal background: training particulars, years in current practice, previous practice, professional affiliations;

b) Conditions of practice related to patients: number of patients per week, referrals, economic background of patients, impressions on patients, and age groups catered to;

c) Conditions of practice related to therapeutics: reactions to banning or restricting certain drug types, typical prescriptions for commonly encountered outpatient complaints such as diarrhea, fever, sore throat, cough and colds, and muscle pain; and

d) Perceptions and attitudes pertaining to the treatment of illnesses, patients' problems, the drug industry, drug information, generics and drug policies.

After a pretest, slight changes in the design were made. Initially, the questionnaire, which took 20 to 30 minutes to accomplish, was administered by an interviewer. However, most of the respondents preferred the more flexible self-administered method.

An initial attempt to conduct the survey using a two-stage cluster sample method also had to be abandoned due to geographic limitations, interviewer constraints (a number of them were medical school students while others were new graduates), and a high refusal rate in the targeted clusters. Interviewers were then instructed to approach respondents as randomly as possible within their designated geographic areas.

Cross-tabulations and multiple regressions were used to validate the model.

D. *Results*

A Profile of Filipino Physicians and Prescriber Characteristics.. Of the 315 questionnaires reproduced and distributed, 129 or 41 percent responded. Approximately 15.9 percent of the respondents did not return the self-administered questionnaires while 28.6 percent outrightly refused. Sixty-two percent (62%) of these refusals came from the provinces. The survey began in October 1988 and should have ended by December. However, due to its wide coverage (Manila, Nueva Ecija, Tarlac, Lanao del Norte, and Negros Occidental), as well as the high refusal rates, the survey was extended to January 1989.

It must be noted that during these survey months, heated debates on the Generics Bill took place. This may partially explain the high refusal rate, as well as the negative attitude by some of the respondents approached. Others refused because the interview would take up too much of their time. The high refusal rate from the provinces raises some concern.

Table 18 shows the general characteristics of the respondents. Sex distribution is fairly well-balanced, with a majority of the respondents being married. The respondents are relatively young; 70 percent is less than 40 years old. A majority (53%) has had some form of specialty training. Educational qualifications (64%) were obtained from four of the country's best medical schools. Internship was more dispersed, although 38 percent had their internship in the four major schools. At the time of the survey, 89 percent of the respondents indicated affiliation with medical institutions, mostly hospitals and medical schools.

Classifying their location of practice into urban (Metro Manila) and rural (outside Metro Manila), a majority of the respondents (57%) were classified as "rural" practitioners. The "rural" location has to be further qualified though because some "rural" respondents were based in the towns of the provinces. Most respondents indicated that their patients belong mostly to the lower (53%) and middle (37%) income classes. The average number of patients seen per week is 85, with 22 percent of the respondents indicating a weekly load of more than 100 patients. The average time spent per patient is 20 minutes, with 34 percent of the respondents indicating 2 to 10 minutes average time spent per patient.

Seventy-eight percent (78%) of the respondents indicated giving prescriptions in 60 percent or more of patient visits while only 14 percent did so in 40 percent or less of patient visits. In 40 percent or less of telephone consultations, 77 percent of the respondents indicated giving prescriptions while 5 percent did so in 60 percent or more of telephone consultations. Not too many referrals are made from one doctor to another, with 91 percent of the respondents referring 40 percent or less of their patients to their colleagues. Fifty-four percent (54%) indicated receiving new patient referrals in 40 percent or less of total patients in an average month (Table 19).

Most physicians seem to be satisfied with their patients, with 56-77 percent of the respondents saying that patient attitudes pose little or no problem in their practice. The attitudes enumerated include: patients not following advise, accepting only what they want to hear, demanding inappropriate services and treatment, docile, inquisitive, not wanting drugs they are not familiar with, and wanting more expensive drugs.

A larger percentage (66%) of the respondents consider that the patient's capability to pay comprise 50 percent or more of their decision in prescribing drugs. Only 12 percent of them think that the patient's capability to pay comprise less than 20 percent of their decision in prescribing drugs.

Table 20 presents the prescribing patterns of the respondents regarding symptoms of diarrhea, fever, sore throat, cough and colds, and muscle pain. Most respondents (79-95%) indicated prescribing drugs (mostly brand names) for these symptoms. An estimated 12-37 percent of the respondents stated they do not indicate the generic name when prescribing while 8-15 percent stated they give only generic names.

Presented in Figure 5 are the categories of drug products frequently prescribed by the respondents to patients suffering from diarrhea. Anti-motility agents account for 41.6 percent of all drug products prescribed while antibiotics account for 32.3 percent. Only 16.8 percent is accounted for by oral rehydration solutions. It is worth noting that 6.2 percent of the drug

Table 18:   General Characteristics of Physician Respondents

Sex	Male	65
	Female	64
Civil status	Single	38
	Married	90
	Sep/Wid	2
Age group	<30	33
	30-39	57
	40-49	23
	50+	17
Type of practice	Gen Med	60
	Surg Sp	27
	Intnl Med	19
	Pedia	18
	Others	6
Medical schools	UP,UST.UE.FEU	83
	Others	46
Internship	UP,UST.UE.FEU	49
	Others MMla	38
	Outside MMla	42
Medical institution	Affiliated	115
	Not affiliated	15
Address of practice	Urban	55
	Rural	74
Social Status of Patients	Lower	69
	Middle class	48
	Upper	2
	Unclear ans	11
Number of patients per week	Average	85 patients
	S.D.	86
	0-50	68 respondents
	50-100	33
	100+	28
Ave. time spent per patient	Average	20.6 mins
	S.D.	36.2
	2-10 mins	44 respondents
	11-20	58
	21+	27

Table 19: Patient Referrals and Prescriptions

Percent of patients	<20%	20-39%	40-69%	60-80%	>80	No ans
New Referrals (ave. month)	26	44	27	17	8	8
Refer to colleagues	81	37	3	4	2	3
% visits w/ prescriptions	10	8	9	29	72	2
% tel. consult given prescriptions	83	17	3	4	3	20

Table 20: Prescribing Behavior for Various Symptoms

Symptom	Total # Respndts	# Physicians Presc Drugs	#not ind generic	# ind gen only
Diarrhea	109	83.8%	36.7%	8.3%
Fever	124	95.4	12.1	12.9
Sore Throat	108	83.1	23.1	14.8
Cough-cold	113	86.9	35.4	16.8
Muscle Pain	103	79.2	35.9	12.6

Figure 5
Drug Products Usually Prescribed, Diarrhea

Anti-motility 94: 41%

Anti-amoebic 8: 4%

Chloram-Strep 14: 6%

Antibiotics 73: 32%

Oral Rehyd Soln 38: 17%
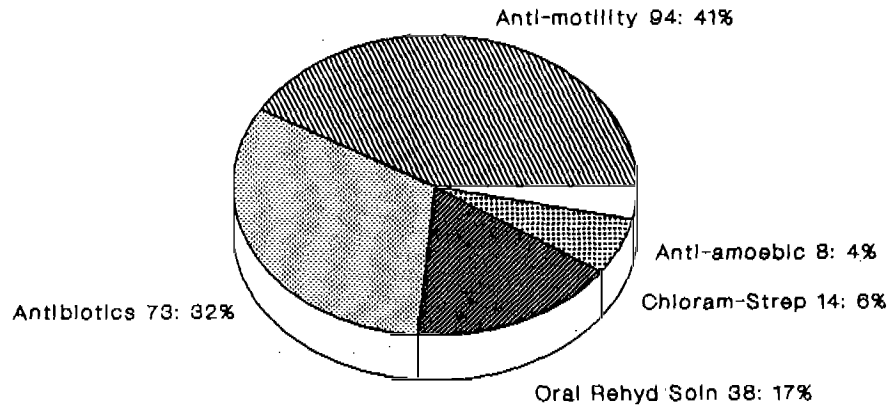
Figure 6
Drug Products Usually Prescribed, Fever

Paracetamol
217: 92%

Others
19: 8%
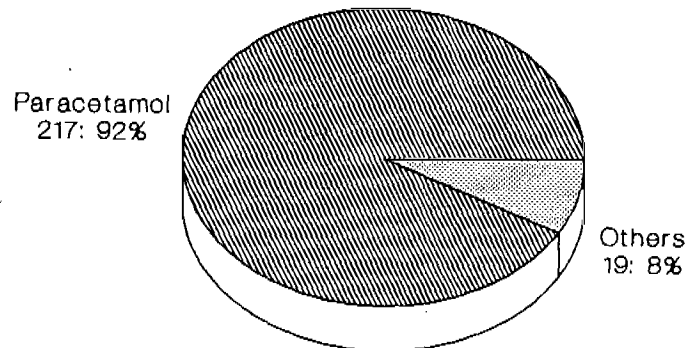
products prescribed consist of dangerous irrational drug combinations (chloramphenicol-streptomycin).

For fever, an overwhelming 95.2 percent of drug products prescribed consist of paracetamol as the single active ingredient. A very small proportion consist of aspirin (1.8%), amoxicillin (1.8%), chloramphenicol (0.4%), dipyrone (0.4%), and lagundi (0.4%), a herbal preparation (Figure 6).

In Figure 7, sore throat prescriptions comprise mostly (69.8%) of antibiotic prescriptions, mainly ampicillin (30.2%) and erythromycin (24.2%). Penicillin, the drug of choice if ever an antibiotic is to be given to relieve sore throat, accounts for only 4.4 percent. Antiseptic lozenges account for 23.6 percent, and cough-cold preparations, 3.8 percent.

Two major product classifications are predominantly prescribed for cough and colds: cough and cold preparations (45%) and mucolytics (42%) (Figure 8).

For muscular pain, 54 percent of the drugs prescribed consist of NSAIDS, mainly naproxen, mefenamic acid, and diclofenac. Centrally acting muscle relaxants (of doubtful efficacy) combined with analgesic (usually paracetamol) account for 20.6 percent. Single preparations of paracetamol and aspirin (usually the rational choice if drug therapy is indicated) account for only 5.3 percent. Dangerous pharmaceutical products (no longer used in many countries because of high index of risk over benefit) containing butazone or glafenine account for 10.1 percent and 8.5 percent, respectively. Another 1.6 percent is accounted for by vitamins and tranquilizers (Figure 9).

With respect to sources of drug information, the most frequent references indicated by the respondents are the Philippine Index of Medical Specialties (PIMS), books, journals, drug sample literature and seminars (Table 21). The PIMS is an index of drug products sold in the Philippines mostly by multinational drug companies and is prepared by the companies themselves.

Table 22 summarizes the respondents' answers to selected statements that might reflect their personal attitude and awareness of drug-related issues. Responses are on a scale of 1- 5, corresponding to the following response options: strongly disagree (1), disagree (2), neither (3), agree (4), and strongly agree (5).

From their responses can be gleaned a profile of moderation. The areas where strong agreement was voiced out are in the following: that the government should take an active role in developing an indigenous pharmaceutical industry, that there are too many drugs in the market for the same indications, that adverse drug reactions are a serious concern, and that there is a need to consider the patient's capability to pay for drugs in prescribing.

Strong disagreement was expressed against telling patients as little as possibly necessary for treatment. It is interesting to note though, that there seems to be no opinion on such statements as: brand names guarantee quality, detailmen are sources of information, and to prescribe generic drugs is reasonable. There are a few inconsistent responses, especially in relation to the attributes of drug companies.

The distribution of physicians' responses to policy formation regarding some problem drugs is summarized in Table 23. They are sources of concern since most of these drugs are said to

Figure 7
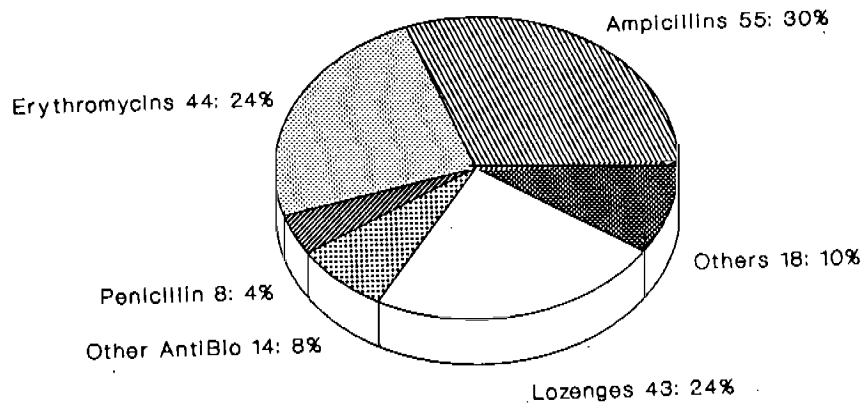## Drug Products Usually Prescribed, Sore Throat

Ampicillins 55: 30%

Erythromycins 44: 24%

Penicillin 8: 4%

Other AntiBio 14: 8%

Others 18: 10%

Lozenges 43: 24%

Figure 8
Drug Products Usually Prescribed, Cough and Colds

Cough Cold Prep 97: 45%

Others 11: 5%

Guaifenesin 8: 4%

Bronchodilatrs 9: 4%

Mucolytics 92: 42%
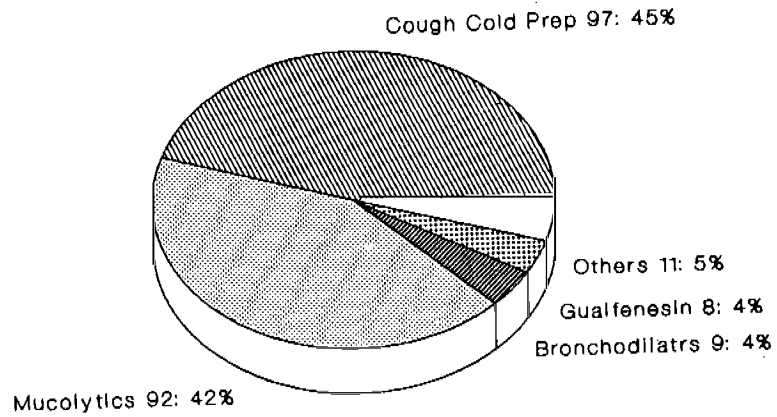
Figure 9
Drug Products Usually Prescribed, Muscle Pain

NSAIDS 102: 54%

Others 3: 2%

Glafenine 16: 8%

Muscle Relaxts 39: 21%

Butazones 19: 10%

Paracetamol 10: 5%
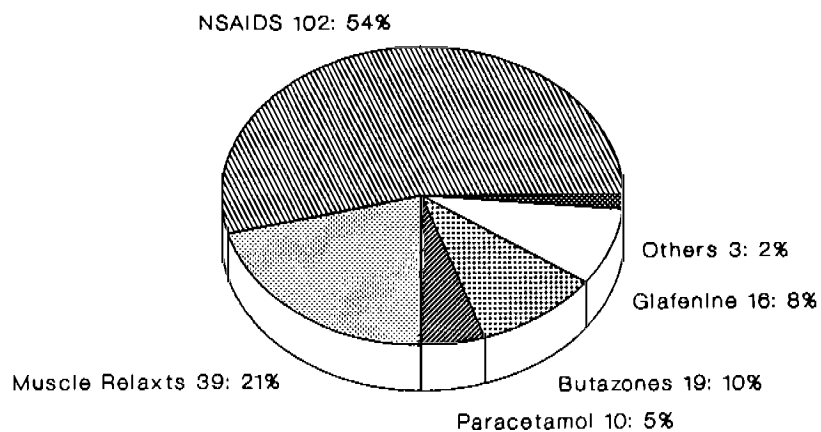
Figure 10
Health Care Expenditures (1985)

Gov't (US$130.9)
26.1%

Private (US$564)
73.9%
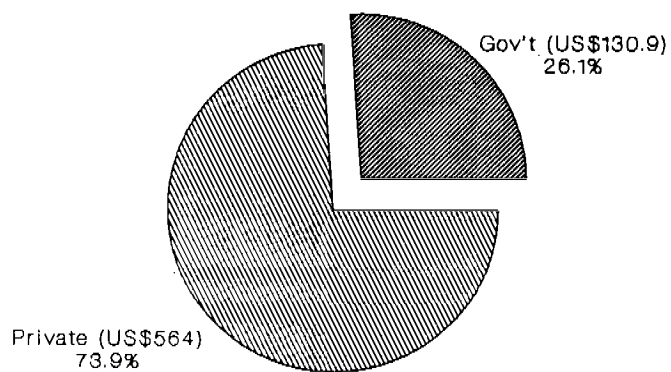
Basic Source:Intercare (1987)

Table 21: Sources of Drug Information

	Never	Almost Never	Few Times	Frequent	Total
Source of Drug Info					
a. Detailmen	23	24	51	26	124
b. Journal articles	4	5	59	57	125
c. Books	3	2	48	72	125
d. Journal ads	8	18	56	32	114
e. Pharmacist	61	34	21	5	121
f. PIMS	5	3	40	78	126
g. PDR	17	19	50	35	121
h. Seminars	2	10	70	43	125
i. Drug sample lit	6	14	56	50	126

Table 22: Responses to drug-related issues and policy statements

	Mean	SD
1. Respect of fellow MDs more important than admiration of other people in the community	3.07	1.44
2. Best to tell patients as little about illness as necessary for treatment	1.81	1.19
3. Technical skill more important than dealing with patient's psycho-social problems	2.48	1.21
4. Treatment to cover most eventualities better than individualized treatment	2.38	1.26
5. Doctor's time better spent treating those actually sick than trying to prevent disease	2.24	1.40
6. Substantial portion of patient's complaints are psychological	2.74	1.38
7. Important to consider patient's ability to pay for drugs	3.73	1.26
8. Brand names guarantee quality	2.99	1.46
9. Gov't should take active role in developing indigenous pharmaceutical industry	4.28	1.09
10. Gov't has capacity to regulate intro of new drugs in the market	3.41	1.55
11. Too many drugs in the market for the same indications	4.24	1.12
12. Reasonable to prescribe generic drugs	2.97	1.51

Table 22 (continued)

	Mean	SD
13. Profits of Drug companies commensurate to their contributions to drug research and devt.	2.91	1.47
14. Drug promotion and advertising indispensable to medical practice	2.91	1.39
15. Drug companies generally exploit 3rd world countries	3.35	1.38
16. Nat'l Drug Policy will reduce income of doctors	2.25	1.11
17. a. Detailmen mention side effects of drug promoted	2.6	1.27
b. Claim more uses of drugs than are justified	3.16	1.47
c. Important sources of drug info	2.99	1.47
18. Filipino prescriber warns patient of side effects	3.43	1.20
19. Graduates for past 5 yrs are more informed than older ones	2.96	1.34
20. Adverse drug reactions a serious concern	3.76	1.32
21. Fully aware of Nat'l Drug Policy contents	3.31	1.33
22. Nat'l Drug Policy beneficial to Filipino people	3.37	1.31

Response options: strongly disagree (1), disagree (2),
neither (3), agree (4), strongly agree (5).

Table 23:   Responses to Policy Stance on Some Problem Drugs

	Maintand Without Retrctn	Slightly Restrcd	Hvly Restrcd	Banned	Total
a. Dipyrone containing products	8	41	21	54	124
b. Oral proteolytic enzymes	22	48	15	40	125
c. Appetite stimulants	37	56	15	40	148
d. Combination antibio as antidiarrheals	16	46	30	32	124
e. Cerebral activators	20	47	37	15	119
f. Chloramphenicol	34	69	24	1	128
g. Cough-cold combination	31	57	20	19	127
h. Multivitamin-minerals	86	35	7	0	128
i. High-dose estrogen-progesterone	13	47	48	15	123

cause serious disorders, are of doubtful efficacy (especially combination drugs), or are generally associated with high index of risk over benefit.

Sixty-percent (60%) of the respondents favor the banning or heavy restriction of dipyrone-containing products and 51 percent expressed the same sentiment with respect to high-dose estrogen- progesterone combinations. In general, however, most of the respondents favor slight or no restriction for the problem drugs presented.

Determinants of Prescriber Behavior. Cross tabulations on the determinants of the frequency in which patient visits resulted in a prescription, did not yield any significant results. More than two-thirds of the respondents chose the same frequency range. This indicates the general trend toward consultations ending in prescriptions.

Factors that would explain the profile of physicians who prescribe ORS as first choice for the treatment of diarrhea were tested. The likely relationship on logistic regression was estimated using the maximum likelihood technique. Results are shown in Table 24. Among the variables contained in the model, two seemingly inconsistent variables surface as significant predictors. ORS will likely be the first prescription for diarrhea by physicians whose patients come from the lower income brackets.

There is a significant negative relationship between a physician's consideration of his patients' capability to pay and his choice of ORS as treatment for diarrhea. In other words, ORS is not the first choice of a doctor who considers capability to pay as an important criterion for prescribing a drug. There may be some difficulty interpreting this. It is possible that "capability to pay" cuts both ways. It could either mean that patients are able to afford the medicines prescribed, or that someone who can pay more should be given the more expensive medicine. The latter interpretation makes sense in this context, medicines given away for free in most public health centers. There seems to be some price or income discrimination in prescribing--some drugs are for the poor while some are for the rich, without regard for appropriateness of use.

NSAIDS would be the first choice for the relief of muscle pain by a physician who believes that drug promotion and advertising are indispensable to medical practice. This is most likely the profile of a physician who relies heavily, if not solely, from drug company sources like detailmen. NSAIDS, which consist mainly of naproxen, mefenamic acid and diclofenac, yield more risk than expected benefits. Yet, the other significant predictor for muscle pain prescription confuses the issue. Findings also show that a doctor who believes that drug company profits are justified by their contributions to the research and development of drugs, is not likely to prescribe NSAIDS as first choice for muscle pain. This highlights the ambivalence of Filipino physicians regarding drug companies.

Highlights and Remarks. An analysis of the specific drug products prescribed for the symptoms listed in the questionnaire reveals the following:

> 1. The prevalent use of anti-motility drugs and antibiotics for diarrhea appear to be unnecessary. Their use in non-specific diarrhea, the most commonly encountered symptom in general practice clinics, is contrary to universally accepted principles of pharmacology and medicine. On the other

Table 24: Logistic Regression Results on
Likelihood that Physician will Prescribe
Oral Rehydration Salt for Diarrhea:
Prescribe NSAIDS for Muscle Pain
as Dependent Variables

Variables	ORS	NSAIDS
Intercept	.615	-0.341
	(2.884)	(2.461)
Age	0.018	-0.003
	(0.028)	(0.025)
Sex	0.540	0.692
	(0.605)	(0.514)
Location of practice	0.394	-0.199
	(0.654)	(0.573)
Specialist training	-0.981	-0.802
	(0.644)	(0.523)
Member: Med Society	-0.451	0.512
	(0.891)	(0.788)
Affil: Med Institute	-0.758	-0.216
	(0.667)	(0.528)
Patient load	-0.000	-0.003
	(0.004)	(0.004)
Ave. time spent/Patient	0.035	-0.026
	(0.032)	(0.027)
Income class/Patient	0.802	0.031
	(0.447)**	(0.293)
Index of patient satisfaction	0.484	0.283
	(0.889)	(0.700)
Detailmen as sources of info	0.185	-0.026
	(0.275)	(0.238)
Ave. no. of visits of Dtlmen	-0.178	0.004
	(0.177)	(0.158)
Believes:		
Drug promotion indispensable		
to medical practice	-0.143	0.461
	(0.279)	(0.253)**

Table 24 (continued)

Variables	ORS	NSAIDS
Drug industry profits commensurate to R & D	0.254 (0.286)	-0.479 (0.232)**
Important to consider patients' capability to pay	-0.591 (0.284)**	0.181 (0.219)
Gov't has capacity to regulate new drugs in market	0.235 (0.200)	-0.065 (0.164)
Aware of contents of Nat'l Drug Policy (NDP)	-0.070 (0.260)	-0.201 (0.213)
NDP will benefit Filipino people	-0.421 (0.288)	0.166 (0.237)

Figures in parenthesis are standard errors.

hand, oral rehydration salts, the treatment of choice for diarrhea, is sparingly prescribed.

Dangerous pharmaceutical products without valid justification for use in diarrhea are being prescribed in small but significant proportion. This can trigger a higher rate of patient consumption since patients tend to repeat and recommend to others the consumption of a previously prescribed drug (Hardon 1988).

2. Paracetamol, although the drug of choice for fever, is also being prescribed unnecessarily. Most cases of fever on an outpatient basis would not need any antipyretic drug.

3. Antibiotics, including chloramphenicol and dipyrone, are still being prescribed for fever. Dipyrone is banned in many countries because of serious toxicity. Antibiotics, especially chloramphenicol, should not be given blindly for fever because of unacceptable risk-to-benefit ratio. They should only be given if intended for a specific infection causing the fever.

4. Antibiotics are prescribed unnecessarily for sore throat. The wrong antibiotic is usually being prescribed, even in cases where antibiotic use is justified. Antiseptic lozenges are being prescribed unnecessarily. Cough-cold preparations also get into prescription, quite an irrational option for the treatment of sore throat.

5. Fixed-dose cough-cold preparations are prescribed most commonly for cough and colds. Next are the mucolytic preparations, products of questionable necessity and efficacy for cough and colds. Although in small proportions, there can still be found prescriptions of doubtful efficacy in bronchodilators, antibiotics, enzymes and vitamins.

6. The use of NSAIDS as first choice for muscle pain is questionable since risks outweigh expected benefits. Even relatively safer analgesics like paracetamol and aspirin, which account for a very small proportion of prescriptions for muscle pain, are seldom necessary. Also of doubtful efficacy are combinations containing muscle relaxants. A significant proportion of the prescriptions consists of dangerous drugs banned in other countries. Vitamins and tranquilizers are also prescribed.

One patient-related factor, his capability to pay, figures significantly in the prescription for a more appropriate first choice. This factor gathered the second strongest agreement among physicians. Since a majority of the respondents' patients come from lower to middle income classes, considering their capability to pay may be more of a necessity. However, the tendency to segment drug products (that some drugs are for the rich and some are for the poor) is without due regard to the appropriateness of the prescription. Moreover, the need for symptomatic relief may also be due to the doctors' desire to impress rich patients. Cost-consciousness produces a reverse effect of market segmentation. Its policy implications will be explored in the final chapter.

Quite irrational drug choices are sensitive to the relationship or attitude of physicians to drug companies. Although links have not been clearly established, they came out to be significant, albeit ambivalent in the case of a questionable first choice for treatment of muscle pains. The influence of drug companies has been all-pervasive among practitioners, probably creating divisions among groups and ambiguousness within themselves. This largely springs from the relative dependence of practitioners to drug companies for an important aspect of practice--information.

The approach to household utilization of drugs from the perspective of prescriber behavior highlights the need for rationality in the use of pharmaceuticals. The pressure for behavioral change seems to fall heaviest on the prescriber. However, the prescriber is but a "customer" protected and managed by producers (Leifman-Keil). This points to the need to depersonalize the relationship between prescribers and producers (drug companies). The role of the drug industry in the current pattern of medicalization has been much written about. What remains is for political will and action to effect some changes.

IV. PHARMACEUTICAL USE AND SUPPLY: A MACRO OVERVIEW

This chapter views drug utilization from the broader perspective of the Philippine pharmaceutical market. The first part examines data sources utilized in this review while the second examines drug expenditures in the country vis-a-vis total health care expenditures (HCE). The third part describes the country's drug supply system and the last explores policy issues concerning drug pricing, local drug manufacturing and government procurement of pharmaceuticals.

A. *Data sources*

A number of studies have looked into the pharmaceutical industry in the country. Foremost of these is the 1980 study by Kintanar (now an Assistant Secretary of Health) for a UN body. The study provides a comprehensive accounting of the drug requirements in the Philippines and explores the production capacity of drug companies in 1980. The study is fortunate to have gained access to recent estimates of Kintanar on drug requirements and consumption for the United Nations Industrial Development Organization (UNIDO) and the DOH's project on the development of the Philippine pharmaceutical industry.

A more recent work by Intercare (1987) is the often-cited study on health care expenditures and financing in the country. This work has been published as part of the proceedings of the Regional Seminar on Health Care Financing sponsored by the Asian Development Bank, Economic Development Institute (World Bank) and the East-West Center.

The Philippine drug industry has also been the subject of a comprehensive master's thesis by Gabunada (1983). The study records the growth trends and future prospects of the industry. It is valuable in examining trends in the manufacturing industry from the postwar period until 1981, as well as in mapping out its growth prospects and problems. Gabunada has also updated certain aspects of his work through a "factbook" on the pharmaceutical industry.

A study conducted by the National Census and Statistics Office in 1979 brings together statistics from official surveys on drug manufacturing and the retail trade. However, the present National Statistics Office (NSO) can provide very little data on drug consumption because of the changing levels of aggregation. Drugs were not even included as part of the consumption basket used in the computation of the Consumer Price Index. In terms of pharmaceutical trade, the NSO remains to be the main source of statistics on imports and exports of medicines and pharmaceutical supplies.

Other sources of data include the IMS, a marketing research agency with an international network specializing in pharmaceutical intelligence. They regularly come out with drug sales data and projections. The DOH's Task Force on Pharmaceuticals also provides data culled from various sources.

## B. *Patterns of Pharmaceutical and Health Care Expenditures*

How much do Filipinos spend for pharmaceuticals? The annual per capita expenditure for drugs in 1987 was P162.00 ($7.70). Table 25 shows that this figure is a 34.5 percent improvement over 1985 figures in real terms. A big rise in per capita consumption appears to have been felt between 1980 and 1985. In real terms, 1987 figures are 82 percent of 1975 figures. The table reflect sales figures generated mostly through drugstores or pharmacies and, thus, does not take into account expenditures for medicines through informal or illegal channels. No data is available on the extent of drug consumption through irregular channels.

The real decline in per capita expenditures on drugs reflects the decline in overall health care spending in the country. The Philippine health care system is predominantly private. An Intercare study (1987) shows that of the total HCE of US$762.9 million spent in 1985, 73.9 percent was accounted for by the private sector and 26.1 percent by the government (Figure 10). Private spending which comes mainly from household budgets, comprised 49.5 percent of private HCE. The same study notes that over a five-year period, private spending for health care has steadily increased from 65.8 percent in 1981 to almost 75 percent in 1985, growing by an average of 5 percent. In contrast, public spending for health care for the same period shrunk by 35 percent. Overall HCE in 1985 was only 91 percent of 1981 levels.

The declining patterns in health care expenditures may be due to the economic crisis which hit the country from 1983 to 1985, during which the peso was devalued against the dollar and foreign exchange restrictions and tight money supply prevailed.

In terms of private spending for health care, Figure 11 indicates that the bulk of expenditures in 1985 went to professional charges (34.4%), drug purchases (32.9%), and hospital fees (26.6%). Drug expenditures dropped by 5.7 percent from 1971 to 1985. Provider fees have remained stable for the past two decades. It is interesting to note that of the total expenditures, the shares of hospital charges and drugs have been moving in opposite directions. Hospital charges increased between 1965 and 1971 and decreased in 1985. Meanwhile, drug expenditures decreased between 1965 and 1971, then increased in 1985. This trend merely reflects movement in the prices of the two (NEDA 1986). Later on, drug price indices outpaced those of medical services.

Figure 11
Distribution of Private Health Care Expenditures

Year

■ 1965   □ 1971   ▨ 1985
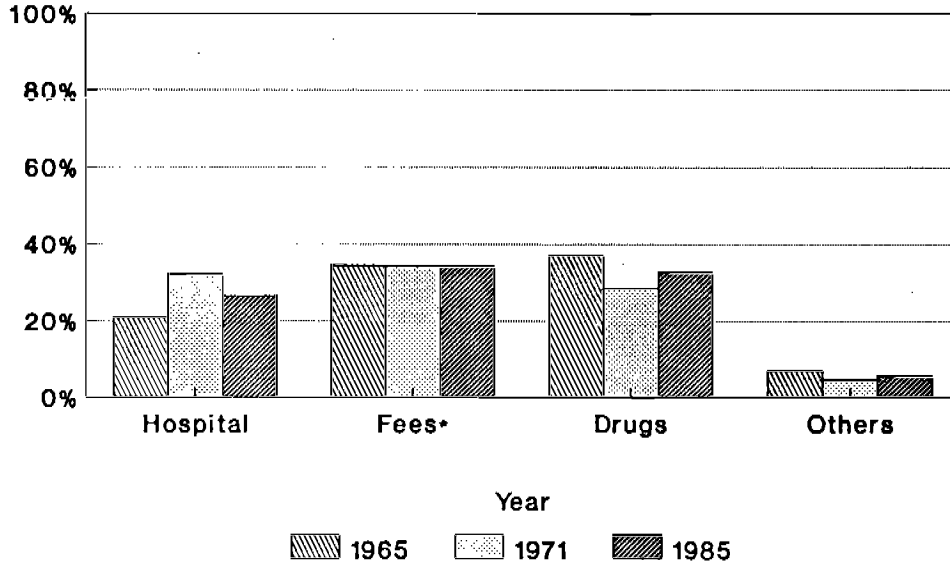
•Provide fees:Physicians, nurses, etc.
Basic Source of Data: FIES cited in Intercare (1987)

Figure 12
Consumption and Requirements Major Therapeutic Classes

▨ Consumption Value   ▨ Required Value
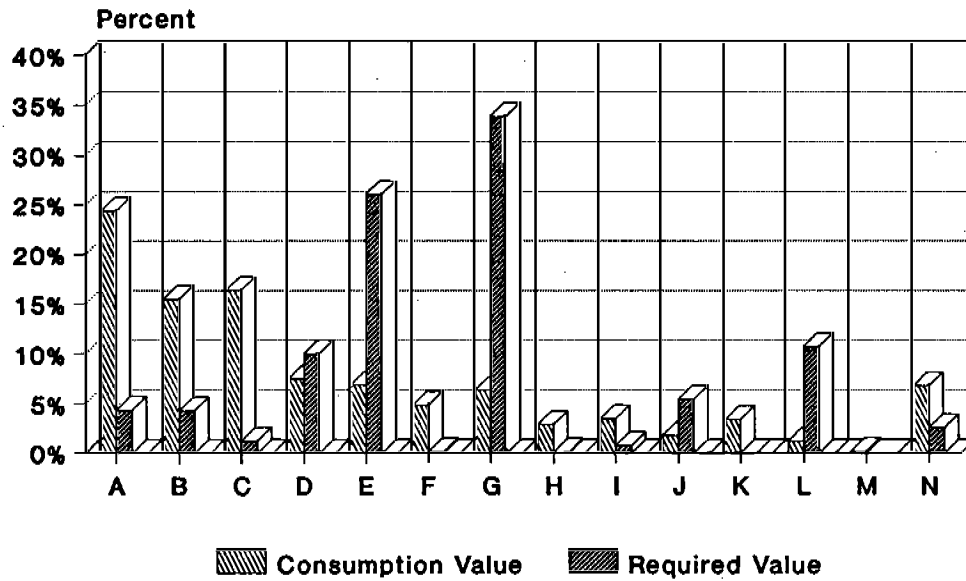
Source: Q. Kintanar, R.P. Unido Papers

Table 25: Per Capita Sales of Medicines/Drugs

Year	Current Values (pesos)	Real Values (1978 pesos)
1975	41.33	53.33
1980	48.85	35.17
1985	115.17	32.66
1987	162.00	43.94

Source: RP-UNIDO Papers.

Table 26:   Government Allocations and Drug Expenditures

Year	Allocation (in P million)	% of Total DOH Budget	Expenditures (in P million)
1986	122	3.34	80.4
1987	287	7.72	336.4
1988	300	5.6	____
1989	400	____	____

Source: Department of Health, Logistics & Procurement Office

In terms of public spending for health care, the bulk of expenditures went to curative care. The Intercare study shows that between 1981 and 1985, 57 percent of the total amount spent by the government went to curative care (i.e., hospitals) compared to the 33.3 percent that went to preventive care. The share of preventive care has declined from 37 percent in 1982 to 28 percent in 1985, while the share of curative care has risen from 54 percent in 1982 to 63 percent in 1985. Public spending in health came from local and national tax revenues (87 percent). During the same year, user charges or operating income accounted for only 4.9 percent of government fund sources while foreign loans and grants accounted for 8 percent. User charges comprised 23.2 percent. The category "others," which did not show any aggregation, accounted for 34 percent of total HCE spending. Compulsory insurance benefits consisted 4 percent of total HCE while foreign loans and grants consisted only 1.8 percent of total HCE.

Table 26 shows the value of allocations and drug expenditures of the DOH. In 1988, allocations for drugs comprised 5.6 percent of DOH appropriations from the national budget. Compared to previous years, government allocations for drugs declined as a proportion of DOH expenditures. Other program budgets had to fund drug expenditures which exceeded allocations.

The adequacy of these drug expenditures may be gleaned from consumption/requirement ratios. Kintanar (1987) provided estimates of consumption levels and requirements based on the country's disease incidence, current standard therapy and price levels. In Figure 12, consumption levels in 1987 represent merely 18 percent of total drug requirements for that year. Excess consumption is noted for certain drug types, notably drugs for ailments of the sensory organs, skin, sex hormones, and the genito-urinary area. Inadequate consumption is noted for drugs for parasitosis, blood-related, cardiovascular, and systemic hormone disorders. Between 1985 and 1987, inadequate consumption persisted for the same types of drugs. In one case, dermatological requirements declined but consumption increased.

The extent to which these estimates are effects of volume changes rather than price is uncertain. At best, the consumption- requirement ratios indicate the nature of therapies sought in the market as a result of self-medication practices and/or inadequate diagnoses. Shortfalls in consumption also indicate the role of other factors that affect consumption, for instance, capability to pay and the value placed on health.

Unpublished tables of the 1985 Family Income and Expenditures Survey (FIES) show that of the total number of families surveyed, only 89 percent reported expenditures for medical care. Health care expenses comprised only 2.1 percent of total family expenditures. The proportion of families reporting such expenditures increased directly with income. Ninety-four percent (94%) of the top-earning families reported spending approximately 2.5 percent of their income on mendical care. Meanwhile, only 67 percent of the lowest income-earning families reported spending 1.4 percent of their income on medical care. Such expenses took up a smaller proportion of family income compared to those spent for alcoholic beverages and tobacco. This is true especially among the three lowest income classes.

C. Pharmaceutical Supply and Distribution Systems

In December 1986, the Bureau of Food and Drugs of the DOH registered some 12,153 drug products: 10,048 (82.6%) are in brand names, the rest in generics. Belonging to appoximately 40

therapeutic classes, these products correspond to 7,500 drugs. The total number of drugs registered at that time exceeded those registered the previous year by 94.6 percent. For each product class, there exists numerous brands under various formulations. Table 27 presents an estimate of the number of brands and generics proliferating for selected product types.

Consumers obtain pharmaceuticals either by buying from retail drugstores or by asking from government health centers where these are given free-of-charge. Drug manufacturers utilize either of two distribution networks: direct to retail outlets or through distributors. Fifty-three percent (53%) of the distribution work is done by distributors while 47 percent is done by the drug manufacturers themselves. Figure 13 shows the distribution flow from manufacturers to end-users.

Distribution companies are large establishments responsible for the distribution and promotion of the various lines of drug product. Wholesale/retail outlets and hospital pharmacies are serviced by distribution companies, which have vast networks of depots, detailmen, and salesmen. One distributor may handle competing products. A drug industry study notes that distribution fees vary from 12-15 percent of product sales, depending on the type of product handled.

Latest figures from the Bureau of Food and Drugs show that there are 1,034 drug departments (importers/exporters as well as distributors and wholesalers of finished products and raw materials) and more than 9,000 drugstores and pharmacies. The IMS, however, has on record only 5,000 pharmacies (Businessworld 1988). A status report of the Drug Association of the Philippines (DAP) shows that there were more than 8,585 drugstores, 882 hospital pharmacies, and 325 rural pharmacies (botica sa barangay) scattered throughout the country in 1986. In 1985, 89.5 percent of total market sales were conducted through retail drugstores, while 10.5 percent were made through hospital pharmacies. Of the pharmacy sales, 73.3 percent were made in private hospitals and 26.7 percent were sold through government hospitals.

Across the country, the drug distribution system is fairly advanced, albeit geographically concentrated in rich centers. Metro Manila is the biggest market for drugs in the country, with shares ranging from 44.2 percent in 1975 to 48.8 percent in 1985. The region is occupied by 12 percent of the country's population. In 1985, it contributed nearly half of the national output.

As in other less developed countries, pharmacies or retail drugstores in the Philippines appear to be important sources of health care by virtue of their relative accessibility. They are run like any commercial establishment on a profit basis and employ salespersons who may not have any training in drug dispensing. These salespersons are often approached for suggestions on the best drug therapy. Some get commissions from the sale of certain product lines. Drugstore owners themselves are provided with all kinds of incentives or discounts by drug distributors. It is quite common to see drugstore signs bearing the name of the drug company sponsor. Discounts may be given not only on total sales volumes but also on a per unit basis. This means that for every unit sold, a bonus of one or more units will be given free-of-charge in the next order. This is not unlike the "push therapy" cited by Haak (1987) from other authors.

Over-the-counter drugs are brisk business. Prescription drugs are easily obtained without prescription. Pharmacy law requires the presence of trained pharmacists in these establishments.
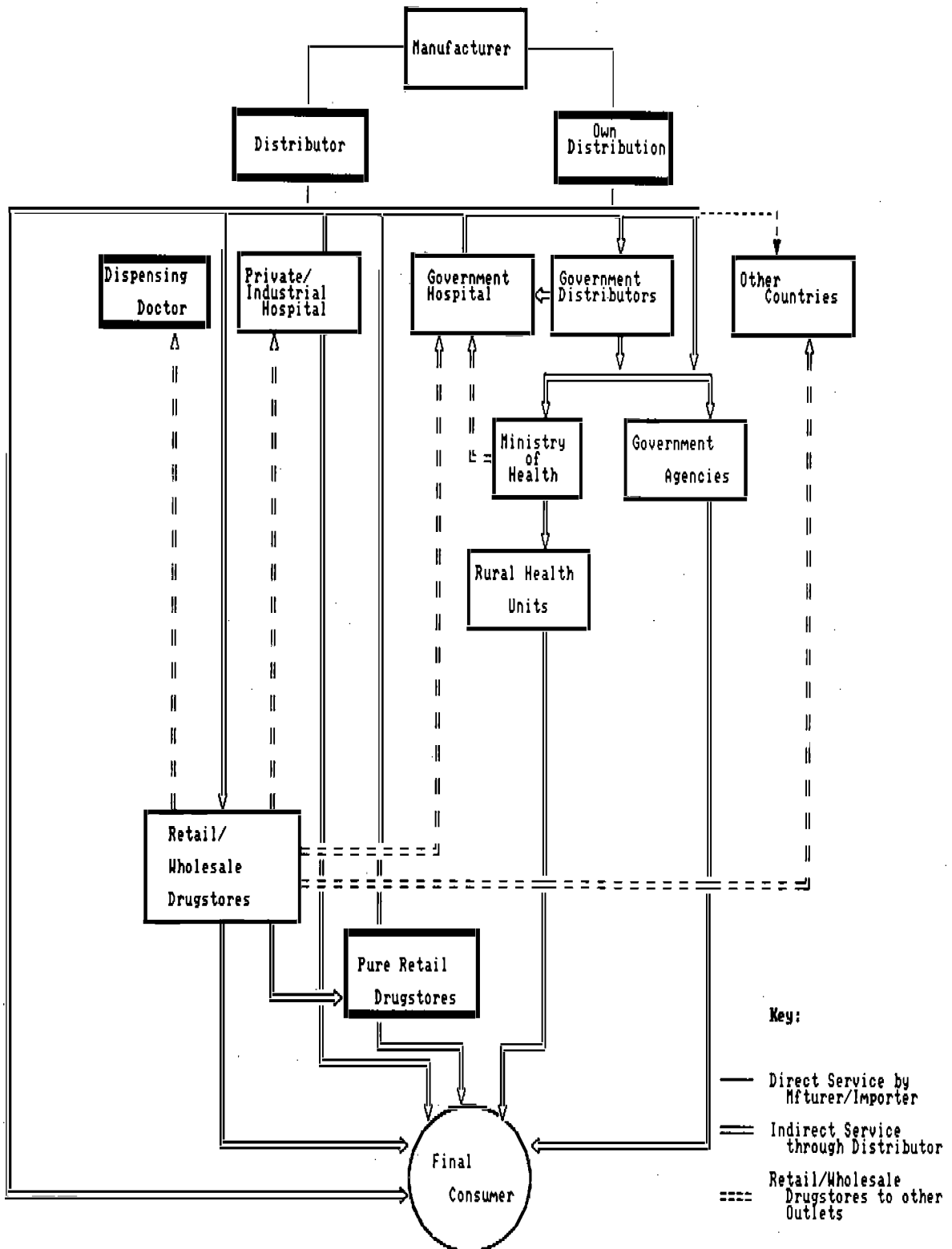
Figure 13
Pharmaceutical Distribution Chart

Source: IMS

Table 27: Number of Brands and Generics
Under Selected Product Types, 1986

Type	Formulation	No. of Brands	Generics
Paracetamol	single	244	202
Ampicillin	fixed dose combination	113	---
Penicillin	single	209	195
Penicillin vk	single	272	115
diphehydranine	single	7	2
	fixed dose	23	---

--- data not available
Basic source of data: Bureau of Food and Drugs, DOH
Source: DOH Task Force on Pharmaceuticals

In the Philippines, the practice is to prominently display the "diploma" of the owner, who may be a pharmacist, along with the license to operate (if there is any). Most large supermarkets have a drug section, while major drug retailers also carry grocery lines.

In the public sector, drugs are distributed through government hospitals, health centers and rural pharmacies. The public distribution system is shown in Figure 14. Of the total drug sales in 1985, only 4 percent were sold to government (Intercare 1987).

About 85 percent of drugs procured locally are distributed equally among the 1,991 rural health units (RHU) spread across the country. Fifteen percent (15%) are held as reserve stocks for national and regional levels. The provincial health officers are responsible for distributing the medicines and supplies to municipalities, which in turn distribute them to the RHUs. Medicines prescribed to patients by RHU medical personnel are given for free. A constant concern, however, is the ability of the government to sustain such an operation given chronic budget shortages.

D. *Policy Issues and Concerns*

Drug Pricing. Drug prices have outpaced prices of other basic commodities, except for the periods 1980-1982 and 1984-1985. It is interesting to note that from 1984 to 1985, when the country experienced its worst economic crisis, drug companies managed to contain the rise in drug prices. Yet, at the start of the economic recovery in 1986 and 1987, with inflation at 1 and 4 percent, respectively, drug prices soared faster than consumer prices (Table 28).

The price structure of the drug industry is determined in part by the nature of the market of the type of drug (Figure 15). The price movement of over-the-counter or proprietary drugs is parallel to those of other commodities which consumers buy using their disposable incomes. The market for ethical or prescribed drugs would be more sensitive to correlates of prescriber behavior. The rise in prices varied across the years for both types of markets. In Figure 15, a two-year pattern in the movement of drug prices in these markets can be observed. Prices of over-the-counter drugs rose faster during the best (1980-1981) and the worst years (1984-1985), economically speaking. On the other hand, prices of prescribed drugs rose faster during the slowdown (1982-1983) and the recovery periods (1986-1987).

These price increases for the two types of market may be attributed to demand and supply factors, as well as new product developments in the market, particularly prescriber medicines. Patterns in the OTC market may be interpreted in a straightforward manner. Although the relationship is by no means perfect, a rise in per capita income (measure of economic status) may improve health states and enhance the people's capability to pay for drug therapy and maintenance. Under low per capita income, health conditions may worsen and people may turn to self- medication instead of obtaining prescriptionf for medicines through formal consultations with physicians. That both economic recovery and slowdown may increase demand, hence prices for prescribed drugs, defies easy answers. For the prescription drug market, this may be the case of supply considerations outweighing demand conditions.

An analysis of the financial statements of some 39 firms in the drug industry shows that mark up prices vary depending upon the drug firm's nationality. Mark up prices are defined as the

Figure 14
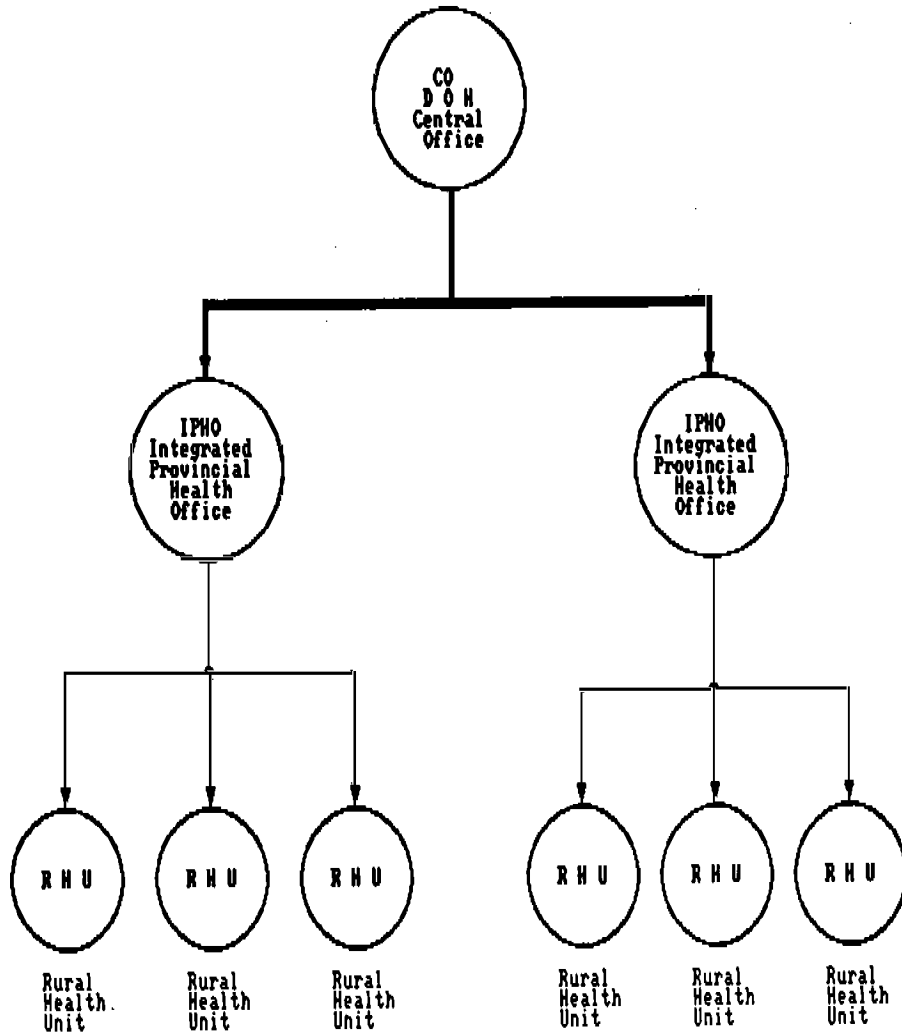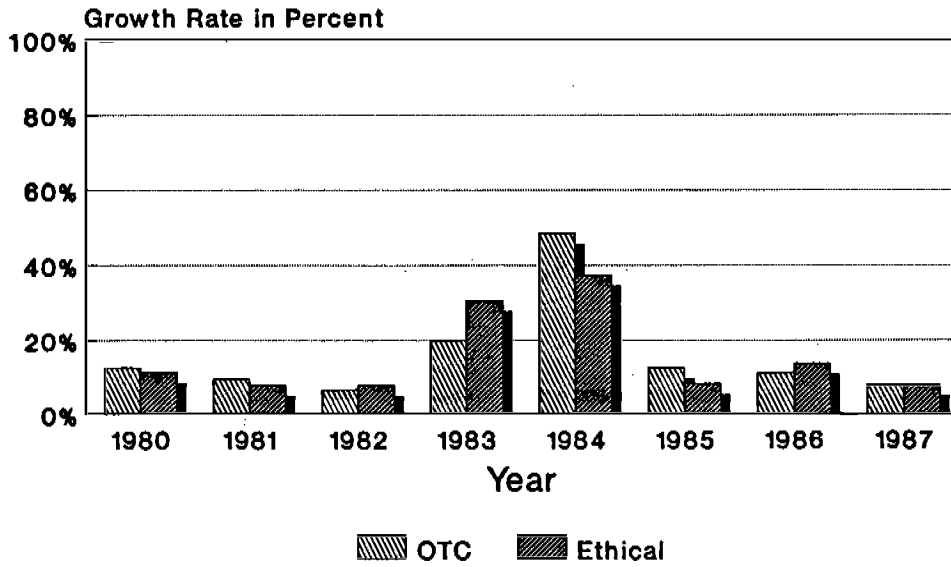**Distribution Points for RHU Drugs/Medicines Procured**
by Central Office

Figure 15
Movement of Prices in Ethical and OTC Drugs

Growth Rate in Percent

OTC   Ethical

Source of Data: IMS, Philippines, 1988

Table 28:   Drug Prices vs. Consumer Prices. 1980-1987
(growth rate in percent)

Price Index Type	1980	1981	1982	1983	1984	1985	1986	1987
Consumer	18.2	13.1	10.2	9.9	50.3	23.0	.9	3.8
Drugs	11.6	8.4	7.6	29.0	39.2	9.0	13.2	8.2
OTC	12.6	9.6	6.6	20.0	48.7	12.5	11.2	7.8
Ethical	11.4	8.0	7.8	30.8	37.6	8.3	13.7	8.0

Basic source of data: IMS. Philippines. 1988
Ref: Cuyegkeng et. al. 1988.

Table 29: Breakdown of Mark-ups: Domestic Vs. Foreign Firms

Type of Firm	OpExp	Profits	Taxes
Domestic Firms	87%	8%	4%
Foreign Firms	53%	29%	16%

Figures are averages for the 1983-1986 period.
Calculated from company financial statements from SEC.

percentage increase a firm imposes on top of what it has initially paid for its products. The average markup for domestic firms is 43 percent while the average markup for foreign firms is 132 percent. On the average, foreign firms charge three times more than domestic firms.

Operating expenses account for roughly 66 percent of markup prices, profits, 18 percent and taxes, 10 percent. A significant proportion of the amount that goes to operating costs is utilized not in manufacturing but in such aspects of sales as promotions and distribution (Table 29).

There is a significant relationship between a drug firm's nationality and the markup components. Operating expenses account for 87 percent of markup prices of domestic firms and 53 percent of those of foreign firms. Profits account for only 8 percent of the markups made by domestic firms and 29 percent of those made by foreign firms. Taxes comprise 4 percent of the markups imposed by local companies and 16 percent of those imposed by foreign firms.

The average markup charged by domestic firms appears to be less than one third of those charged by foreign firms. Almost 90 percent of the much smaller markup of domestic firms is go to operating expenses, while almost half of the much larger markup of foreign firms go to profits and taxes. This indicates that domestic firms are far more efficient in delivering drugs and medicines to the local market than foreign firms.

Leading in sales is a Filipino corporation which has a market share of 21.28 percent. In general, multinational firms control 60 percent of industry sales. Among them, individual shares range from less than 1 percent to a high of 5.4 percent.

The generics drug program is expected to alter current pricing practices due to stiff competition in the market. It is generally acknowledged that drugs sold as generics are five times less expensive than branded products (Foster 1989). A case in point for the Philippines is that of paracetamol which costs only 30 centavos in 1986 prices. A top-of-the line brand of the same dosage form costs P1.80 (Tan 1986, cited in Manlayaon 1988). The Generics Law is expected to affect not only prices but the overall way of doing business, drug utilization and prescription.

Local Production of Drugs. A 1979 classification of the level of development of the pharmarceutical industry in Third World countries (Wang'ombe and Mwabu 1987), clasifies the Philippines under group 3 (out of 5 groups). This category is characterized as having the potential to process a broad range of bulk drugs into dosage forms and manufacture simple bulk drugs from intermediates. This is supported by an OECD study (cited in Tucker 1984) which shows that 91 percent of local drug supplies are processed and formulated domestically and only 9 percent are imported.

In local production, 90 percent of all active materials and auxiliaries used are imported. Only one local company, established in 1981, is engaged in the manufacture of raw materials for antibiotics (e.g., ampicillin, amoxycillin, and cloxacillin). These active substances are then sold to other drug manufacturers or are exported. For a time, the firm enjoyed a protected status from the state which prohibited the importation of these substances.

The Bureau of Food and Drugs distinguishes between drug laboratories and drug departments. Drug laboratories refer to manufacturers while drug departments are establishments engaged in the distribution/wholesale as well as the import/export of finished products and raw

materials. The IMS lists 524 companies active in the pharmaceutical business as manufacturers or importers. There are 32 large-scale manufacturing laboratories. Two of these, Interphil and Drugmakers, are exclusive contract manufacturers for registered manufacturing companies without laboratories. Four others produce their own product lines aside from being contract manufacturers.

In terms of trade, pharmaceutical imports comprised 1.12 percent of total imports, while drug exports averaged only 0.12 percent of total exports. The country's drug import bill reached P103 million in 1987. Import expenditures on drugs manifested an annual growth rate of 8.3 percent. Vitamins, vitamin preparations, and penicillin, streptomycin, and antibiotics comprise the biggest subgroups imported. A significant decline in the import of antibiotics was observed after 1982 due to the establishment of Chemfields and the protection it enjoys. The company imports medicinal preparations and raw materials from more than 30 countries, manily from the United States, Switzerland, Germany, and the United Kingdom. It exports vitamins and similar preparations which comprised one-fifth of total drug exports. In 1987, major export markets were Hongkong, Taiwan, and Malaysia.

The absence of a petrochemical manufacturing capacity in the country prevents the development of a viable chemical industry. Studies commissioned by the UNIDO, however, pinpointed that upstream integration is still possible due to the presence of raw materials, mainly of agricultural origin (sugar, cassava, corn starch, and medicinal plants). such raw materials could be used as critical inputs in the production of pharmacologically active chemicals using biotechnology. At present, the government operates three herbal processing plants which produce four herbal drugs. On a pilot basis, there are attempts to establish a multipurpose fermentation plant for antibiotics. Still on a pre- feasibility stage is a project for the establishment of a penicillin and 6- Aminopencillanic acid production plant.

All these are in line with the government's thrust to attain self-sufficiency in pharmaceutical. This may be a slow process considering the shortage of fund sources, but the experience of Chemfields shows that upstream integration in pharmaceutical development is possible in the country. However, current experience in herbal drug manufacture shows that projected production costs may exceed the selling price (Gamboa in Manlayaon 1988). It may be worthwhile to echo Foster (1989) at this stage when she warns that most African attempts in local self-sufficiency in pharmaceutical production have had mixed results. She strongly argues that:

> The objective of domestic drug production should be to get good quality, therapeutically useful drugs to people who need them at prices they can afford. It should not be to enhance national prestige, or to achieve self-sufficiency, or to generate employment, although all of those things might be desirable. If domestic production can provide good quality, low-price drugs, all to the good. If not, it is probably better to buy drugs abroad as cheaply as possible, package them locally--and choose another sector to lead industrial development. (p.15)

Public Procurement of Drugs. The DOH procurement system has been the subject of so much controversy due to certain practices durng the earlier regime. For instance, during the Marcos administation, a local drug company was able to gain executive fiat to be the sole supplier of government medicine requirements. But with the change in government, procurement has been

subject to fair bidding procedures, a system which netted some 30 percent savings on the part of the DOH.

On the planning stage at the DOH is a distribution system based on the size of the population. The DOH is also seriously considering proposals which call for one formulary per region rather than having one national formulary. This proposal intends to make drug purchases more relevant to the region's health needs. At the regional level, there is some discretion on the purchase of drugs in excess of regional allotments from the national office.

One of the pillars of the National Drug Policy is the targetted procurement of government medicine supplies. This recognizes the critical role that adequate and timely supply of pharmaceutical supplies (including vaccines) play in establishing and restoring the people's confidence in the public health system. One of the approved steps is to allow the government, in view of a shortage, to directly import raw materials and allocate them to local drug companies. This is a powerful and critical tool in the transition phase of the government's Generics Law policy. To gain leverage, drug groups have threatened to withhold supply. The provision to import does not in any way impinge on the private firms' right to import. It may even redirect current pharmaceutical production to address the shortage problem which normally occurs for drug types not profitable to market but beneficial to the health needs of the countryside and the poor.

But the government's procurement system must ensure that public health units have timely and adequate supplies of pharmaceuticals. As studies have shown, centralized bulk buying is more efficient than fragmented efforts (WHO 1988). Greater leverage in negotiations among prospective suppliers can be realized through bulk purchases. Given a stronger purchasing power, market search can be conducted for the lowest price offers. Countries like Mozambique and Bangladesh have enjoyed the huge savings their strategy offers. The design of the drug procurement program must feature a decentralized manner of identifying and forecasting the country's drug needs. Technical and manpower, even storage, capabilities may not yet be present.

E. Concluding Remarks

The predominantly private health care system in the country has caused the people not only demand constraints, given low levels of income, but also ineffective and wasteful use of limited resources. The problem remains one of making cost-effective decisions along with efforts to expand resource bases. Options lie toward improving the procurement system for the public sector, undertaking local production of essential drug substances with the ultimate goal of providing quality yet affordable medicines and providing a policy climate for the local drug companies to enable them to fiarly compete with foreign counterparts.

V. POLICY DISCUSSIONS AND CONCLUSIONS

This chapter highlights certain issues that arose from previous discussions, particularly within the context of the National Drug Policy (NDP), recently enacted into law. The main objective of the NDP is to provide more Filipinos access to critical drugs. Its four areas of concern are: quality assurance, rational use, self-sufficiency and targeted procurement of drugs by government.

The immediate link of a drug utilization study with policy is related to the policy objective of improving rational use. This study has shown several aspects of the problem. First, the relatively low levels of consumption, either in terms of complaints, consumption-requirement ratios for critical needs and per capita expenditures. Second, the very meager resources spent on drugs of low therapeutic value (cold/cough/stomach remedies and vitamins, among others). And third, the wasteful consumption of drugs by households which reflects patterns of irrational prescribing.

A program of rational drug use must aim to improve drug selection and utilization on the basis of efficacy, safety, need and cost.

The determining factors of household behavior are less related to socioeconomic variables as they are to morbidity, health service supply, and demographic factors. Households have shown willingness to purchase medicines brought about by morbidity conditions. The nature of information that patients receive from such formal service units as physicians, health centers, or drugstores needs to be addressed in the light of purchases of medicines of questionable value. Self-prescribing largely influenced by media and experience with previous prescriptions.

The extent irrational choice made by prescribers is largely a function of drug industry attributes, especially the doctor's perception of the role and importance of the drug industry. The physician's heavy reliance on information provided by drug companies places them in an ambivalent position vis-a-vis the industry's shortcomings.

The proliferation of drugs of doubtful efficacy and dangerous drug combinations also merits action from government. So long as they remain unregulated, they will be prescribed. This calls for stronger police powers for the regulating and monitoring agency, the Bureau of Food and Drugs. In addition, vigilance is required among professionals, particularly in monitoring and reporting adverse drug reaction cases. This can strengthen regulatory powers.

The NDP with generic prescribing as its centerpiece program, aims to break the monopoly of knowledge vested in the physician and, ultimately, on the drug producers. With its basic thrust of providing choice to consumers by making them aware of a wide range of products and prices for the same drug indications, the NDP hopes to encourage physicians to practice more cost-effective prescribing. One way of making the market more price competitive is by breaking into the protections provided by brand names. With generic prescribing, the relationship between physicians and drug companies is expected to weaken or move along more professional lines.

With the NDP, the control over drug purchases goes back to the consumer. However, this makes consumers more vulnerable to the drug companies as they aggressively change strategies in the face of generic practice--from influencing physicians to promoting their products directly to consumers. To counter such promotional practices in the drug industry, the government should provide alternative and consistent sources of information to the public, as well as prescribers. Otherwise, nothing much would change. Consumer groups have to close ranks with the public to protect this newfound sovereignty.

Clearly, the rational use of drugs by households and prescribers require behavioral changes that cannot be achieved overnight. It requires sustained campaigns to inform and educate the public, as well as health practitioners, on the role and appropriate use of medicine not only within the health sector but also for overall societal considerations. The starting point of behavioral

change is information. In the case of the drug market, the informational problem is compounded by the existence of more than 12,000 brands in the market. While generic prescribing promotes choice among consumers, there seems to be no provision on how choices can be improved. Consumers still have to contend with the numerous products in the market, many of which are of dubious quality and use. The economic benefits of generic labelling and prescribing can be outweighed by the costs of wrong, wasteful or low quality utilization unless drug production and distribution are rooted in the actual health needs of the vast majority.

Concern for the cost implications of poor drug selection and procurement has led many developing countries to adapt an essential drugs program. The improvement of the selection process in the present context of the NDP necessitates a firm commitment by the government to put together an essential drugs list (EDL). An EDL would enhance rational choice and drug use and promote a more systematic procurement, distribution and monitoring system, especially for the government. This will promote more cost- effective purchases of medicines for households, as well as for the government. It will also stretch the government budget to make available an adequate supply of drugs for the basic drug needs of the population, particularly the poor.

The highly private sector orientation of the Philippine pharmaceutical market has rendered such a list inoperable, even if, to a small extent, it may exist for government procurement purposes. Given the program's advantages, other countries' experiences show that it has been undertaken and directed at the primary level (LSHTM and KIT 1989). It forms one of the core elements of the primary health care approach. International evidence strongly supports such an approach (WHO 1988).

Alongside behavior and informational issues, the problem of purchasing medicine and quality monitoring poses a major challenge to the government. But with the support of WHO, UNICEF and other agencies concerned with improving the health situations of nations, opportunities to make the present situation better exist. Bulk purchases have saved governments precious foreign exchange. The governments of countries which have adopted the EDL continue to educate their health workers on its effective use. Assistance at estimating drug needs is a prerequisite to government planning and procurement. An EDL is determined on the basis of community health needs and may vary among areas. However, common diseases have fairly standard treatments. Packaging drugs in these standard forms can greatly assist the curative capacity of primary level health workers.

A more forward-looking policy addresses the issue of self-sufficiency in the production of pharmaceuticals. Studies and recommendations made by UNIDO on this aspect have been utilized in the formulation of the NDP. What is required at present is firm resolve on the part of the government to pursue the program. The initial costs that may be borne must be weighed against its long-term benefits.

Meanwhile, drug industry regulations must be reviewed to facilitate a reduction in drug prices. In all countries of the European community, for example, regulations are imposed on wholesale and retail price margins (Abel Smith 1983). Rational prescription can also be supported by limiting sales promotion activities. This can be done either by issuing guidelines as to what amount can be deducted as costs in the calculation of prices and profits, or by banning the distribution of samples to doctors and medical facilities.

A major challenge, too, for the Philippines lies in promoting some form of system in the private consumption of medicines. Expenditures for drugs largely come from household budgets. Strategies must be designed on how limited household budgets for drugs can be maximized on safe and efficacious drugs. One way to do this is through health insurance. The health insurance system may also be one area where rationality in medicine use can be promoted through a system of reward and sanctions. But with the weakness of the country's health insurance system, it may take some time before clear policy directions in this aspect can be seen.

A more promising area is on the community level. Access to essential drugs can be improved through a cooperative undertaking wherein households contribute to a community fund be used solely for health purposes. Other countries have their community revolving drug funds. Some non-government organizations are exploring this area of cooperative endeavor. Its success may depend on certain prerequisites, such as substantial start-up funds, good management, correct estimates of drug needs, timely procurement, a "saving" culture, community involvement, and commitment.

These four issues on behavior, information systems, costs and participation, indicate clear policy directions that may be undertaken in an integrated manner. A policy menu is presented below.

Time	Policy Interventions	Expected Outcome or Affected Areas
Short-term	Strengthening of generic use	Lower prices of drugs
	Adoption of an EDL	Cost-effective prescribing and use of resource
	Strengthening of information dissemination capability of BFAD and medical institutions	Alternative and objective sources of drug information
	Review of the safety of all drugs in the market	Banning of dangerous drug combinations and other substances
	Development of training modules for health personnel on generics and EDL (including retail stores)	Rational use of medicines through better information
	Decentralization of drug needs but effective control over procurement process through bulk purchases, importation of essential supplies	Efficiency in drug procurement and distribution

	Identification of communities with viable organizations to undertake revolving drug funds	Community participation and sustainable supply of essential drugs
	Review of drug industry particularly pricing and promotions	Reduced drug prices and rational prescribing through regulation
Medium-term	Strengthening of medical curricula on EDL	Information and rational use of medicines
	Strengthening of community programs	Community participation and adequate supply
	Promote EDL through financing schemes	Cost-containment and adequate supply
Long-term	Local production of essential active substances	Self-sufficiency in pharmaceutical production

Clearly, drug utilization issues cannot be separated from overall health care issues. Medicine forms one of the many inputs for better health. Pharmaceutical planning must form part of the overall vision for health and health care in the country. The challenge has been taken by many countries. For the present administration, the extent to which it takes up the challenge will determine the effectiveness of its health policies.

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