

**RATIONAL PHARMACEUTICAL MANAGEMENT PROJECT**

**NEPAL COST-SHARING IN  
PHARMACEUTICAL DISTRIBUTION**

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## FOREWORD

In April 1995, UNICEF Nepal contacted the Management Sciences for Health (MSH) Drug Management Program (DMP) in Washington, DC, and asked if MSH could assist in overcoming certain problems that had been encountered in the design and implementation of the Community Drug Programme. As MSH manages the Rational Pharmaceutical Management Project on behalf of USAID, and as RPM has an ongoing program in Nepal, it was possible to agree to this request. In May, UNICEF convened a meeting of donors in Kathmandu to discuss the CDP's progress. From the discussion there emerged a consensus that the documentation of CDP's plans should be further strengthened, and that more attention should be paid to the results of existing public interest drug cost-recovery activities, such as those sponsored by WHO, BNMT and UMN.

USAID expressed its willingness to provide technical assistance through the RPM Project for the purpose of conducting a study that would (1) document the resources currently available in the public and private sectors for supporting drug cost-recovery activities and (2) propose the best options for program design and implementation. UNICEF agreed to fund the local implementation costs of the study, and engaged the services of Valley Research Group (VaRG) to conduct a sample survey to collect data at the regional, district, clinical facility and community levels.

RPM Project personnel completed the study protocol in October 1995. Subsequently, from December 1995 to February 1996, RPM staff collected data and documents in Kathmandu and VaRG personnel carried out the sample survey. In April and May, staff from both RPM and VaRG collaborated to produce this report.

USAID and RPM are pleased to have had this opportunity to make this first contribution to the development and implementation of pharmaceutical cost-sharing initiatives in Nepal. Wherever and whenever possible, the study has attempted to make maximum use of existing studies and data. We have tried to be conscientious in acknowledging the contributions of those whose work we have used. Should any oversights be found, however, we request that they be brought to the attention of the RPM Project so that the appropriate citations may be made.

It is sincerely hoped that this study will be useful to HMG, UNICEF, and other concerned agencies in developing strategies to support drug cost-recovery activities in Nepal. As will be seen, a number of concrete and positive results have already been achieved. It is important for the well-being of the Nepali population that this foundation of good work be recognized, built upon, and expanded.

## ACKNOWLEDGMENTS

The Nepal Cost-Sharing in Pharmaceutical Distribution Study would not have been possible without the interest, knowledge and support of Ministry of Health (MoH) counterparts Dr Kalyan Raj Pandey, Director General of the Department of Health Services, shared generously of his time and his ideas, derived from many years of experience and leadership in His Majesty's Government's (HMG) health system Dr K B Singh Karki, in particular and despite the numerous pressing demands upon his time, gave generously of his time and never flagged in his interest and support Similarly, Prakash Pant, newly appointed In-Charge of the Community Drug Programme (CDP), was instrumental in ensuring a successful presentation of the initial findings Dr Asfaq Sheak, Director General of the Department of Drug Administration, together with a number of his staff members, provided both information and insights It is hoped that the findings and conclusions of the study will prove useful to these officials in their ambitious pursuit of a system that will ensure an adequate supply of essential drugs for all Nepalis

The United States Agency for International Development, through its Rational Pharmaceutical Management (RPM) Project, financed the technical assistance required to undertake the study The commitment of USAID Nepal staff members Molly Gingerich, Charles Llewellyn and Matthew Friedman to improving management of essential drugs, and their recognition of the complexity of the problems involved are greatly appreciated

The United Nations Children's Fund (UNICEF) has a large and ambitious program in Nepal UNICEF financed the work of Valley Research Group, an experienced local group who capably managed the difficult task of survey data collection In addition, UNICEF staff members Lars Wadstein, Dr Qussay Al-Nahi and Prabhat Bangdel all gave generously of their time, sharing their ideas, experience and documentation with the investigators It is hoped that this study will assist UNICEF in its efforts to accelerate the development and implementation of successful drug cost-sharing schemes in Nepal

Hans Steinmann, Representative of GTZ in the Department of Health Services, also shared generously of his time and ideas His support for the development of district-level management capacity will help ensure, not only the supply of essential drugs, but also their effective utilization The study of drug shops undertaken by his colleagues in Siraha District provided much useful information on the functioning of the private sector distribution system

Two non-government organizations (NGOs), the Britain Nepal Medical Trust (BNMT) and the United Mission to Nepal (UMN), contributed enormously to this study Their efforts to develop drug cost-sharing systems are exemplary The long-term commitment of these organizations and the selfless dedication of their personnel to the development of Nepal is remarkable Without the willingness of both Dr Richard Harding (UMN) and Dr Kathy Holloway (BNMT) to share sensitive information concerning the operation and performance of their programs with external investigators, the usefulness this study would be greatly diminished It is hoped that the ideas and strategies discussed in this report will assist these and other NGOs to further strengthen and expand their current, largely successful, programs

Finally, special thanks are due to the personnel of John Snow Public Health Group, Inc (JSI) Dr Penny Dawson and Ed Wilson gave unconditional support, both personally and institutionally, to this effort. Janardan Lamichane's knowledge of the Ministry of Health was invaluable to the investigators. He was always available, during the day, night and on weekends. He opened many doors for the investigators, which, had they remained shut, would have led to a far less useful result. His commitment to the development of public health in Nepal is exceptional and inspirational.

It is hoped that, with all the support received, that any errors remaining in this report are minimal. Any errors, however, are the responsibility of the authors. Any corrections, ideas or observations on the part of readers of this report would be greatly appreciated and should be sent to the Director of the RPM Project.

## LIST OF ACRONYMS

|        |  |
|--------|--|
| BNMT   | Britain Nepal Medical Trust                        |
| CDHP   | Community Development and Health Project           |
| CDP    | Community Drug Programme                           |
| DDA    | Department of Drug Administration                  |
| DH     | District Hospital                                  |
| DHO    | District Health Office                             |
| DMP    | Drug Management Program                            |
| GDP    | Gross Domestic Product                             |
| HMG    | His Majesty's Government                           |
| HP     | Health Post  |
| HPC    | Health Post Committee                              |
| JSI    | John Snow, Inc                                     |
| KFW    | Kreditanstalt Fur Wiederaufbau                     |
| LMD    | Logistics Management Division                      |
| MLD    | Ministry of Local Development                      |
| MoH    | Ministry of Health                                 |
| MSH    | Management Sciences for Health                     |
| NGO    | Non-government Organization                        |
| PHC    | Primary Health Care                                |
| RMS    | Regional Medical Store                             |
| RPM    | Rational Pharmaceutical Management Project         |
| SHP    | Sub Health Post                                    |
| UMN    | United Mission to Nepal                            |
| UNICEF | United Nations Children's Fund                     |
| USAID  | United States Agency for International Development |
| VARG   | Valley Research Group                              |
| VDC    | Village Development Committee                      |
| VHC    | Village Health Committee                           |
| WHO    | World Health Organization                          |

## I EXECUTIVE SUMMARY

The provision of essential drugs is a critical element in the delivery of primary health care services and the achievement of the goals put forth in the Alma Ata accords. In Nepal, however, numerous studies have indicated that priority essential drugs are frequently out of stock at the Ministry of Health's primary care facilities. These and other studies have also indicated that Nepalis frequently purchase needed drugs in the private sector, often at high prices. In response to these problems, and given the impossibility of satisfying the demand for essential drugs from within the budgetary resources available to His Majesty's Government, the Ministry of Health, donors and NGOs have implemented several public sector drug cost-sharing initiatives. There has been, however, rather little organized quantitative information available for making either (1) assessments of the degree to which these initiatives are improving the availability of essential drugs or (2) comparisons of the accomplishments of the different initiatives.

Approximately two years ago, two donors, Nippon (formerly Sasakawa) Foundation of Japan and the Kreditanstalt für Wiederaufbau (KfW) of Germany, negotiated important agreements with His Majesty's Government of Nepal to help resolve the chronic shortages of essential drugs through the implementation of a "Community Drug Programme." The two donors also arranged with UNICEF to provide technical support to the Ministry of Health in the design and implementation processes. To date, however, progress has been less substantial than anticipated. RPM has undertaken the *Nepal Cost-Sharing in Pharmaceutical Distribution Study* for the purpose of developing quantitative and qualitative information that would facilitate and accelerate the development and implementation of cost-sharing programs for essential drugs. The study is intended to answer seven questions and to present general recommendations concerning program design and implementation.

RPM and VaRG staff collected information to answer the study questions from (1) documents made available by HMG, donors and NGOs, (2) interviews with staff at HMG, donors, NGOs and private sector pharmaceutical manufacturers and distributors, and (3) a sample survey of MoH health facilities, drug cost-sharing sites, drug retail outlets, and households. For the sample survey, VaRG used tested questionnaires and trained interviewers to collect data for an overall sample that included five regional warehouses, 25 MoH health facilities with no drug cost-sharing activity present, 31 MoH facilities assisted by cost-sharing activities, and 56 retail pharmacies.

For the health facilities without drug cost-sharing activities, VaRG selected a random sample of five districts, with one district lying within each development region, and of these, one district in the mountain zone, two in the hill zone and two in the Terai. Within each district, the sample includes the district hospital, a primary health care center (where they exist), health posts and sub health posts.

For health facilities assisted by drug cost-sharing activities, the sample includes sites from three prominent and well established drug schemes, that is, those operated by the World Health Organization in collaboration with HMG (WHO/HMG), the United Mission to Nepal and the Britain Nepal Medical Trust. VaRG selected the districts based on its judgment of the most representative stratification that could be achieved within cost constraints, with facilities then being randomly selected. For drug retail outlets, survey data collectors visited a total of 56 shops located near each of the 31 facilities assisted by drug cost-sharing schemes. Finally, data collectors interviewed members of 245 households.

An important feature of this study is the use of tracer drug lists, which provide a basis for collecting data on drug availability and drug prices at different types of sites. RPM staff developed four lists in collaboration with MoH counterparts, including one for district hospitals (64 products), one for primary health centers (54 products), one for health posts (39 products) and one for sub health posts (26 products).

The principal findings related to each of the seven study questions are presented below

**1      *What are the drug resources currently available to the MoH?***

- ▶ The MoH receives approximately Rs 50,000,000/year (US\$ 1,000,000) for drugs in the national budget
- ▶ The MoH receives a little more than Rs 200,000,000/year (US\$ 4,000,000) in external financing for drugs from international cooperating agencies
- ▶ The prospect for a substantial increase in funding for drugs in the national budget is unlikely
- ▶ The prospect for long term increases in funding from international cooperating agencies is also remote
- ▶ The current level of dependency on external funding infringes significantly on the MoH's control of its programs

**2      *What is the MoH's capacity to manage available drug resources?***

- ▶ Subject to the availability of funds, the MoH purchases drugs at generally competitive prices, although some further cost savings appear possible. There have, however, been some difficulties in executing the procurement process according to schedule. This has caused disruptions in deliveries to warehouses and health facilities
- ▶ Notable efforts are currently being undertaken by the Logistics Management Division (LMD), with support from USAID, to strengthen the MoH's storage and distribution capabilities
- ▶ The MoH's regional warehouses require additional staff, in order to become effective links in the distribution system
- ▶ Stockouts at the regional warehouses and all levels of primary health care service are frequent, apparently affecting 40% or more of essential items at any given time
- ▶ The MoH currently attempts to make annual or twice yearly shipments to health facilities. To be effective, this strategy requires accurate forecasting of requirements which, in turn, requires accurate data on the demand for drugs. Such data are not available. More frequent shipments would in theory resolve many problems, but this would also require additional management and transportation resources, which are unlikely to become available
- ▶ The rapid increase in the number of remote sub-health centers will greatly increase the burden on a distribution system that has already been strained well beyond any realistic assessment of its capacity
- ▶ Although MoH has published standard drug treatment schedules, the survey found them in only two of 56 health facilities visited

### 3 *What types of drug cost-sharing schemes are currently operating in Nepal?*

- ▶ The WHO/HMG Community Drug Supply Scheme recovers some of the costs for essential drugs at 122 health posts in 18 districts through token registration fees. This scheme is notable for its decentralized management by village health committees (VHCs) that have discretionary control over the use of revenues, as well as for its lack of any effective arrangement for the purchase of supplies.
- ▶ The Britain Nepal Medical Trust supports the Hill Drug Scheme, through which approximately 30 small retail shops sell a limited number of inexpensive essential drugs at a fixed price in seven districts of the Eastern Region. This scheme owes its feasibility to the provision of supply stocks by BNMT, whose charges to participating shops do not cover its administrative costs.
- ▶ The Britain Nepal Medical Trust also supports the Cost Sharing Drug Scheme, which recovers some of the cost of essential drugs in the form of token registration fees and per-item charges for essential drugs distributed at approximately 33 health posts (HP) in four districts of the Eastern Region. This scheme is characterized by its effective, but expensive, supply system, which BNMT operates directly and by the relatively weak role relegated to village health committee.
- ▶ The United Mission to Nepal supports the Lalitpur Medical Insurance Scheme, which recovers part of the costs of essential drugs through insurance premiums. The scheme functions at five health posts in southern Lalitpur District. The scheme is characterized by the critical management authority exercised by its health post committees, and by its effective supply system which UMN operates directly, and which achieves economies through its association with Patan Hospital.
- ▶ Several other, smaller schemes, generally supported by nongovernmental organizations that usually charge token fees for registration and/or token per-item fees for essential drugs, are operating in a small number of health posts in scattered parts of the Kingdom, for example, in Ramichap and Baglung.
- ▶ It is reported that most health posts without drug schemes charge a token registration fee, similar to that charged under the WHO/HMG scheme. It is believed that these revenues are not widely used for the purchase of supplies of essential drugs.

### 4 *How do existing drug cost-sharing schemes perform?*

- ▶ The following table compares the three most important cost-recovery schemes according to several assessment criteria. Except in the case of the first assessment criterion, making drugs more routinely available, these criteria were not necessarily explicit objectives of the schemes. Rather, they were identified for the purpose of the present study.

**TABLE 1**  
**Comparative Performance of Three Drug Schemes**

| Indicator                                 | BNMT Cost Sharing | UMN Lalitpur Insurance | WHO/HMG Community |
|---|-------------------|------------------------|-------------------|
| Availability (MoH = 60%) <sup>a</sup>     | 72.4%             | 84.0%                  | 57.2%             |
| Subsidy Increase (Rs) <sup>b</sup>        | 17,978            | -6,691                 | 0                 |
| HP Drug Stock Increase <sup>c</sup>       | 76.3%             | 65.3%                  | 6.9%              |
| HP Utilization Increase <sup>d</sup>      | 53.5%             | 198.5%                 | No Data           |
| Avg Drug Cost/Patient (Rs)                | 26                | 12                     | No Data           |
| Relative Unit Purchase Costs <sup>e</sup> | 101.9%            | 78.2%                  | 144.3%            |
| % of Drug Costs Recovered <sup>f</sup>    | 18.7%             | 56.5%                  | 27.1%             |
| Village Committee Authority               | Limited           | Extensive              | Extensive         |
| Administrative Overhead                   | High              | High                   | Nil               |
| Replication Feasibility <sup>g</sup>      | Limited           | Limited                | High              |

Source: Survey data collected for this study plus both published reports and unpublished data provided by BNMT, UMN and WHO

*a* This measure refers to physical presence in health facilities at the time of the survey of products from a list of 39 tracer drugs

*b* Over (under) the standard indent of Rs 50,000/HP/year from the MoH. This figure represents that portion of the purchase cost of additional drugs that was financed by the NGO. Administrative costs are not included.

*c* The volumes of increase are estimated by adjusting the amounts actually spent. The adjustments take into account variations in unit costs. They show the value of drugs that could have been provided had all three schemes purchased drugs at LMD's unit costs. In the cases of UMN and BNMT, the basis of calculation is their actual unit costs. In the case of the WHO/HMG scheme, the basis for calculation is the average unit cost for the lowest priced generically equivalent products found in retail outlets in Kathmandu Valley.

*d* Compared to an estimated national average of 2,000 patient consultations per year per health post. Many factors in addition to the presence of drugs may influence the utilization of health posts, but international experience indicates that availability of drugs is strongly correlated with facility utilization.

*e* For UMN and BNMT, the percent given is the relative cost compared to LMD acquisition costs. In the case of the WHO/HMG Community Drug Supply Scheme, the percent given is the relative cost of the least expensive generically equivalent in Kathmandu Valley retail drug shops. Actual unit costs paid by facilities participating in this scheme are probably much higher.

*f* The percentage of drug costs recovered is the estimated revenue divided by the estimated drug acquisition cost.

*g* "Replication feasibility" provides the summary subjective opinion of RPM. To be effective, efficient and feasible on a large coverage basis, all schemes would require some modification. For example, the BNMT model correctly identifies the need for a supply mechanism that achieves economies of scale in the acquisition process, but probably should assign responsibility for district-to-facility distribution to the participating facilities and their health committees. Similarly, the Lalitpur Medical Insurance model achieves a great deal, but its success also depends on an effective, directly managed supply process, which would be difficult to widely replicate without modifications. Its success may also depend somewhat on the provision of access to quality hospital services, another feature that will be difficult to widely replicate. The WHO/HMG scheme, on the other hand, could be easily replicated, but it has so far brought little public health benefit.

- ▶ The BNMT Cost Sharing Drug Scheme, in summary, achieves significant increases in drug availability, health post utilization and drug consumption, while recovering a relatively modest 18.7% of its drug costs. Its cost-recovery rate would double, if it could reduce per-patient costs to the level of UMN. Its success is attributed to intense administrative effort and a drug subsidy in excess of the MoH standard indent. The feasibility of replication is, however, judged limited. If certain recommended strategies are adopted to improve the efficiency and sustainability of the supply system, feasibility of replication would increase significantly.
- ▶ The UMN Lalitpur Medical Insurance Scheme also achieves very significant increases in drug availability and health post utilization. It achieves an increase in drug consumption with low per-patient costs and low acquisition unit costs. The scheme recovers somewhat more than half of its drug costs and spends 13.4% less than the normal subsidy. Its success derives from intensive technical and administrative support. An unmeasured, but probably significant, factor in the scheme's popularity appears to be the "fringe" benefit of priority access to referral services at Patan Hospital. The feasibility of replication is judged limited. If, however, efforts are focussed in areas where, as in Lalitpur, benefits can include access to quality hospital care, then feasibility of replication would increase significantly.
- ▶ The WHO/HMG scheme achieves an intermediate level of cost-recovery. Village health committees have substantial discretionary authority. Drug availability, however, is unaffected, that is, not significantly different than at HMG facilities unaided by drug cost-sharing. Presumably patient utilization rates are also unaffected. Only one third of revenues are invested in drug purchases and those are probably made at nearly double (or more) the unit price of UMN purchases. Replication would be relatively easy, but without adjustments to the model, it would achieve little in terms of public health.

#### 5 *What drug management resources are available in the commercial sector to support MoH-sponsored programs?*

- ▶ Royal Drugs, Ltd, the largest manufacturer of drugs in Nepal, is wholly owned by HMG. It produces 47 of the products on the MoH Essential Drug List. The remaining four of the five largest Nepali manufacturers each produce between two and thirteen essential drugs.
- ▶ Selected locally manufactured antibiotics, as well as most of those manufactured in India, are relatively expensive, even when purchased in large volumes. Significant savings appear to be feasible, if selected, high-volume items could be purchased through a non-profit procurement agency, such as UNIPAC or IDA, that specializes in the procurement of essential drugs for developing countries.
- ▶ Retail prices for essential drugs in the private sector average up to 150% more than UMN's acquisition prices, even in Kathmandu. Retail prices are probably much higher in more remote areas.
- ▶ Distribution and sales networks are extensive. The MoH's Department of Drug Administration (DDA) has registered 1,086 importers, 1,315 wholesalers, 8,014 retail shops and 10,059 drug products. Linkages for supply of MoH-supported drug cost-sharing initiatives could be developed given proper incentives.

- ▶ The average retail outlet carries approximately 50% of the tracer drugs for district hospitals. The five largest individual wholesalers in each region, on average, carry a similar percentage of these drugs. As the market presently functions, in order to find all of the tracer products, a buyer from a drug cost-sharing site would need to visit a considerable number of retail or wholesale outlets.
- ▶ HMG attempts to control the prices on drugs at each level in the private sector distribution process by stipulating a maximum legal markup as a percentage of the drug's acquisition cost. This policy creates a strong financial incentive to promote high cost products and to discourage the consumption of inexpensive products. Interestingly, the Nepal Chemists and Druggists Association was formed with the objective of enforcing price uniformity, which further discourages competition.
- ▶ In general, MoH regulatory authority over the private sector distribution network appears limited, particularly outside of major urban areas. For example, there were only 741 supervision visits for the 9,329 wholesalers and retailers, during fiscal year 1994/95.
- ▶ Private expenditures for drugs are approximately ten times as great as public sector expenditures, including externally financed expenditures.
- ▶ The average retailer reported approximately 20 sales per day.

**6 *What resources are available at local government and community levels to assist in drug management?***

- ▶ Village Development Committees (VDCs) are receiving significant support in the form of an annual Rs 500,000 grant from HMG, 5% of which is earmarked for health.
- ▶ Village health committees, when established under the Village Development Committees and given authority over health facility revenues, effectively ensure the collection of user fees.
- ▶ BNMT experience suggests that village health committees that lack discretionary control over health facility revenues tend to be inactive.
- ▶ International experience suggests that village health committees have proven ability to identify poor or indigent persons who should be exempted, wholly or partially, from user fees.

**7 *What health-seeking behaviors in the community are relevant to drug cost-sharing?***

- ▶ Many people express satisfaction with local health facilities.
- ▶ The most frequently mentioned way to improve services is to improve the supply of drugs.
- ▶ In the context of this survey, respondents appear to deny the use of traditional healers and private drug shops as a primary source of care.
- ▶ Consistent with other data, many people indicate very high personal expenditures for drugs and other forms of health care.

- ▶ Eighty percent of the population, including two thirds of the poor, indicate a willingness to pay all or part of the costs of the services that they receive

Taking into account the specific findings summarized above, the *Nepal Cost-Sharing in Pharmaceutical Distribution Study* has arrived at five general findings, which RPM believes should be taken into account in future program design and implementation efforts. They are

- 1 The MoH has very ambitious goals that have stretched its human, technical and managerial resources beyond realistic assessments of their capacities. In developing strategies to strengthen the delivery of primary care services, therefore, it is recommended that the MoH assume an overall policy formulation and oversight role, while promoting the development and utilization of local government and private sector capacity to deliver services in accordance with its policies.
- 2 Approximately 80% of the drugs provided through the MoH's facilities are financed by international donors, creating, thereby, a dependency that makes national programs and policies vulnerable to changes in donor priorities and policies. Implementation of drug cost-sharing activities, over a realistic time frame, would be an effective way to reduce this dependency.
- 3 The population is not only willing to pay for drugs, but actually expends approximately ten times as much on drugs as the Ministry of Health, including the donors' contributions. This fact implies that there is no overall shortage of financial resources for drugs. There is, however, a need to develop mechanisms to direct a greater proportion of existing resources towards reasonably priced essential drugs and away from high cost combination products and unnecessarily expensive items, such as third generation antibiotics. Drug cost-sharing schemes can respond to this need by increasing the availability of essential drugs.
- 4 Consistent with international experience, village health committees, often including elected members of the Village Development Committee, have successfully managed health funds under two existing drug cost-sharing models. It is, therefore, recommended that establishment of village health committees be a central feature of all drug cost-sharing schemes and that their role include administrative oversight of health facility operations and discretionary control over the use of drug cost-sharing revenues.
- 5 Some NGO-supported drug cost-sharing models have achieved significant improvement in the availability of drugs. The percent of drug costs recovered has not been an explicit target of these models and has been relatively modest, even when administrative costs are not included. However, it is apparent that these NGOs constitute an invaluable resource that should be exploited in the development of cost-sharing initiatives. However, it is further apparent that there is more than one appropriate and feasible model. In fact, it is very unlikely that a single model could be appropriate for all locations in the country.

In considering next steps, this study and international experience suggest several general principles that should be followed. These are briefly summarized below:

- 1 Given the underlying public health objective, the Ministry of Health should retain technical leadership of cost-sharing initiatives in terms of overall policy and objectives
- 2 As a corollary to the above, and given the current overextension of MoH's operating capacity, the MoH should not be expected to assume implementation responsibilities that are not essential to its leadership role
- 3 Drug cost-sharing initiatives should build on existing experience. Existing models should be adjusted, expanded and/or adapted to new conditions
- 4 Maximum possible advantage should be taken of existing human and institutional resources that have experience developing and implementing cost-sharing schemes
- 5 Maximum possible advantage should be taken of existing capacity in the private sector to perform certain functions in a supply system that ensures that health facilities have reasonable access to supplies of essential drugs at appropriate prices
- 6 Drug cost-sharing initiatives should be based on community management and control

With the foregoing in mind, the following strategic suggestions are made for the consideration of the MoH and its collaborating agencies. It should be reemphasized at this point that the authors of this study do not claim credit for the conceptualization of these suggestions. Rather, they derive from existing experience and the many conversations that the investigators had with professionals and managers working within the current public and private sector drug distribution systems.

- 1 **All drug cost-sharing schemes established in the future should ensure community (VDC) ownership of the program, including discretionary authority over the use of the revenues. Where necessary, existing schemes should be modified in a manner consistent with this suggestion.**

International and Nepali experience have both proven the importance of active community participation. The apparent success of the WHO/HMG model in collecting and depositing revenues in local bank accounts, the average balances of which are now approaching Rs 70,000, is quite astounding (Forty-four percent of these balances, or a little more than Rs 30,000 per health post, derive from savings achieved during the last three years). Similar results achieved by the Lalitpur Medical Insurance Scheme are also associated with significant financial authority delegated to the Health Post Committee.

Local MoH authorities, however, appear to be greatly overextended and under-supported. The District Health Offices (DHOs) do not have enough staff to adequately perform their supervisory functions. They are also under-funded, making field work personally costly, as well as physically challenging. Drug cost-sharing initiatives should coordinate closely with the DHO, but program designs should attempt to minimize any additional burden on that office.

- 2 Within MoH-policy guidelines and objectives, experienced NGOs should be funded to provide the support (technical, managerial, and supervisory) required to establish additional drug cost-sharing sites and, possibly, to support the establishment of the suggested supply system to be operated by private sector organizations**

It is recommended that the MoH, with UNICEF support, negotiate grant agreements with NGOs to assume the responsibility of establishing community drug cost-sharing in specific districts or parts of districts. The MoH, UNICEF and the collaborating funding agencies should agree upon specific general characteristics and objectives that each participating drug outlet should achieve. Within these general characteristics, interested NGOs would present both technical proposals and funding requirements to the MoH, which would evaluate the proposals and negotiate agreements.

Regular reporting on the establishment of drug cost-sharing sites and on progress towards the achievement of the quantitative targets of performance indicators would be a part of each agreement. Included among the requirements of each grantee would be targets for achieving a high degree of village health committee oversight of its health post or sub health post, as well as collaboration with, and support for, the responsible DHO.

- 3 Each drug cost-sharing site should have access to a supply point, eventually to be operated by the private sector, that reliably stocks all required essential drugs and sells them to drug cost-sharing sites at unit prices that reflect the significant economies that can be obtained through large purchases**

A reasonable compromise with the topographic and economic realities of Nepal would be a supply source, "district essential drugs store," located in the headquarters of each district that would sell the required drugs to the program's distribution points. It is recommended that each store stock the complete range of products required by the distribution points participating in the program. Sales records maintained at the district store would provide the data required to monitor the flow of products and revenues, without the need for trying to collect and consolidate data from several independent suppliers or many different scheme sites. Village health committees or health facility personnel would determine the quantity of each essential drug that they require, purchase it at the district store and transport it back to the health facility. It would be a "pull" system in logistics terminology, providing products only on demand. Such systems are familiar to everyone since every tea shop in the Kingdom uses a similar system.

The private sector clearly has the capacity to provide the required service. It is suggested that, with technical support from UNICEF and, perhaps, from the funding agencies, and using a tendering process, the MoH should contract with an agent to establish the district store for each district in which a substantial number of drug cost-sharing sites is being established. An agent, such as Sajha, could probably operate district stores in more than one district, but for the country as a whole there should probably be more than one agent, each serving a cluster of districts. The contracted agents should purchase their supplies at pre-negotiated prices from wholesale suppliers including (1) manufacturers like Royal Drugs, Ltd, (2) importers and wholesalers, and (3) the LMD and regional warehouses in the case of drugs purchased directly by the MoH from international sources such as UNIPAC. Through its normal tendering process, the MoH should negotiate unit prices with local manufacturers, importers and wholesalers that would be fixed for stipulated periods of time and would be paid by the contracted operators of the district stores.

The district stores would charge a limited negotiated markup when they sell products to the drug cost-sharing units. The prices charged could be the same throughout the Kingdom. The markup should not, however, be sufficient to cover all costs of district store operation. District store operators should receive additional periodic payments directly from the MoH, upon determination that the performance criteria stipulated in their contracts have been fulfilled. The amount of these payments would be the variable cost factor in the operator's tender offer and should constitute a performance incentive.

In effect, the UMN operates a system similar to the one described above for the five medical insurance scheme health posts in Lalitpur District. The principal differences of the UMN system are that it operates its own "district store," rather than contracting an agent in the private sector to provide this service, and it provides transportation for those products requisitioned (purchased) in the regular monthly request, rather than placing responsibility for store-to-facility transportation on the facility or the health post committee.

To implement these strategies, the MoH's contract and grant administration capacity should have access to technical and managerial support from UNICEF or the funding agencies. The MoH has demonstrated the capacity to contract for the purchase of drugs, although there have been significant delays. It would not be much more difficult to contract for the above described distribution services and to award and administer grants to NGOs. It is recommended, however, that the initial number of grants to NGOs not exceed four or five. In addition, the possibility that the NGOs be responsible for the initial contracts for supply services should be considered.

It has been suggested that there may be no qualified NGOs in certain districts. This may currently be the case, but this study recommends that drug cost-sharing be initiated where the greatest quantity of experience exists. At least one-third of the districts in Nepal have already had some experience with drug cost-sharing initiatives. It seems probable that extensions of the current spheres of influence of active NGOs would reach at least two-thirds, including the most populous, of Nepal's districts. Once these districts have satisfactorily functioning drug cost-sharing programs, it should not be difficult to identify NGOs qualified and willing to extend the technology to the remaining districts.

Finally, the adoption of the strategies mentioned above requires that participating organizations, including the MoH, UNICEF and the funding agencies, recognize that the primary constraint to the development of drug cost-sharing initiatives is almost certainly not a lack of start-up capital for initial drug inventories. (Depending on the length of the pipeline, which may be short if most products are purchased from local suppliers, the value of required start-up inventories may be as low as a three-month's supply, perhaps Rs 20,000 per health post.) The primary constraints to the widespread initiation of successful drug cost-sharing are more likely to be (1) the capacity to establish functional village health committees, capable of administrative oversight of health facilities and proper management of the revenues that will be collected, and (2) the ability to establish the supply system. These tasks should receive a significant share of the financial resources currently being made available by KfW and Nippon Foundation. If that is done, and the above described strategies adopted, a very substantial number of health facilities should be supported by effective drug cost-sharing schemes by the year 2000. That support should result in substantial improvement in the delivery and distribution of primary care services and may constitute an essential contribution to the very ambitious effort to establish a health facility in every VDC.

## II INTERNATIONAL EXPERIENCE

Cost-sharing in the health sector, particularly in developing countries, is a relatively new concept. Ironically, the Alma Ata initiative of the late 1970s came at a time when many developing countries were already undertaking ambitious programs to extend Primary Health Care (PHC) coverage to under-served populations. These programs often included significant expansions in the numbers of health facilities and, in many cases, district hospitals. Once completed, the operation of the new infrastructure required similarly important increases in the recurrent budgets of ministries of health. In many countries the limited scope for increases in ministry of health budgets created an immediate conflict with the reigning philosophy that health services were a right of peoples and an obligation of their governments.

Starting early in the 1980s, many concerned with the need for additional financing for PHC began to consider user fees. While these fees were usually nominal for individual patients, they could be important in the aggregate, if revenues remained under the control of health facility staff. In many cases, the user fees were not set under national policy, but were the result of local initiatives at the service delivery level where the revenue need was most acutely felt. During the decade and a half that has elapsed since the need for increased funding for PHC became apparent, much has been learned about user fees and how they can help or hinder provision of health services.

Important lessons from international experience include the following:

- 1 *User fees can promote effectiveness, efficiency and equity*

For example, revenue from modest drug charges may be used to increase the availability of inexpensive essential drugs, thereby providing access to a greater proportion of those who cannot afford higher prices in the private sector.

- 2 *Incorrectly designed user fees may, however, reduce effectiveness, efficiency and equity*

For example, if user fees are levied at health posts but not at hospitals, patients will have an additional incentive to use more costly, but free, hospital services, thereby reducing the efficiency of the overall health service system. User fees for drugs may be associated with less "superfluous" demand, less over-prescribing and improved management at health facilities, if drugs become a source of badly needed revenue.<sup>1</sup>

- 3 *The introduction of, or increase in, user fees may be resisted and even dampen demand for priority health services, if unaccompanied by improvements in the perceived quality of services*

For example, the introduction of, or increase in, fees for drugs may be facilitated by improved packaging, even though this might require higher fees. In fact, improvements in quality may lead to sufficient increases in demand that the resulting increase in revenue may completely offset the cost of the quality improvements.<sup>2</sup>

- 4 *Collection of user fees is more likely to succeed if the revenues are retained and managed at the facility where they are collected*

For example, “the Bamako Initiative recommends that user financing of primary health care be planned and budgeted at the community level” It is further recommended that the use of revenues from drug cost-sharing programs not be restricted to only the purchase of replacement stocks Even token fees may not be systematically collected, if the revenue must be deposited in the national treasury<sup>3</sup>

- 5 *A portion of user fee revenue may be used to supplement the regular compensation received by providers, possibly generating further increases in revenue*

For example, properly designed performance bonuses may lead providers to improve the quality of service and to more systematically collect fees, thereby stimulating an increase in demand as well as in revenue

- 6 *User fee systems should have explicit, realistic objectives, and their performance should be assessed periodically on the basis of objective indicators of achievement The latter should not be limited to the quantity of revenue generated*

For example, in addition to the generation of revenue, in any drug cost-sharing system the availability of essential drugs should be monitored, as should any possible decrease in service to those so poor that they cannot pay

- 7 *The knowledge required to identify those who are too poor to pay a specific user fee is most readily available in the local community*

For example, in rural villages health committee members will generally know who is unable to pay a particular user fee, while screening criteria put forth by central governments will likely be insensitive to local determinants of wealth

- 8 *Cost-sharing schemes in the public sector may stimulate development of private sector alternatives, with indirect benefits accruing to the poor*

For example, a decrease in the disparity of fees between the public and private sectors will generally motivate some relatively wealthy people to seek higher quality, but more costly service in the private sector, thereby permitting a greater share of the public sector’s resources to be directed to the relatively poor

- 9 *Cost-sharing schemes are neither simple to design nor easy to implement successfully*

In Nepal, the apparent simplicity of introducing registration fees in order to generate additional financial resources for health is betrayed by the number of village health committees that have deposited the revenues in bank accounts instead of using them to replenish drug stocks or otherwise improve health services

In summary, the implementation of any cost-sharing scheme, whether based on fees for drugs or on a more general set of user fees, is not a simple problem. Many such schemes in other countries have failed to generate the expected revenues and may have created rather perverse, unintended effects as the participants, both service providers and consumers, attempt to maximize their personal utility, often at the expense of the system itself. However, well conceived designs, which (1) consider the lessons learned elsewhere, (2) are clear about their fundamental objectives, (3) are realistic about implementation schedules, (4) rely on the community for daily management and supervision, and (5) provide periodic technical assistance and supportive supervision, have greater probability of being successful.

### III HMG'S INTEREST IN DRUG SALES PROGRAMS

#### A Health Situation

In Nepal the delivery of primary health care services, whether preventive or curative, encounters special challenges posed by the country's geographic, climatic and cultural diversity. Despite these challenges, however, notable progress has been made. For example, delivery of childhood vaccination services is currently reported to reach as many as 75% of infants before their first birthday, and contraceptive use is now estimated to exceed 20% among the country's married women of child bearing age and to exceed 25% in several rural hill districts<sup>4</sup>

To build on the commendable progress that has been made, His Majesty's Government has posed very ambitious objectives in the National Health Policy prepared in 1991. Table 2 presents the National Health Policy's principal objectives and targets for the year 2000.

TABLE 2

National Health Policy Priority Objectives

| Indicators                 | Units of Measurement             | 1991 Estimate | 2000 Target |
|----------------------------|----------------------------------|---------------|-------------|
| 1 Infant Mortality Rate    | Infant deaths/1000 live births   | 107.0         | 50.0        |
| 2 Child Mortality Rate     | Child deaths/1000 live births    | 197.0         | 70.0        |
| 3 Total Fertility Rate     | Estimated lifetime births/woman  | 5.8           | 4.0         |
| 4 Maternal Mortality Rate  | Maternal deaths/1000 live births | 8.5           | 4.0         |
| 5 Life Expectancy at Birth | Years                            | 53.0          | 65.0        |

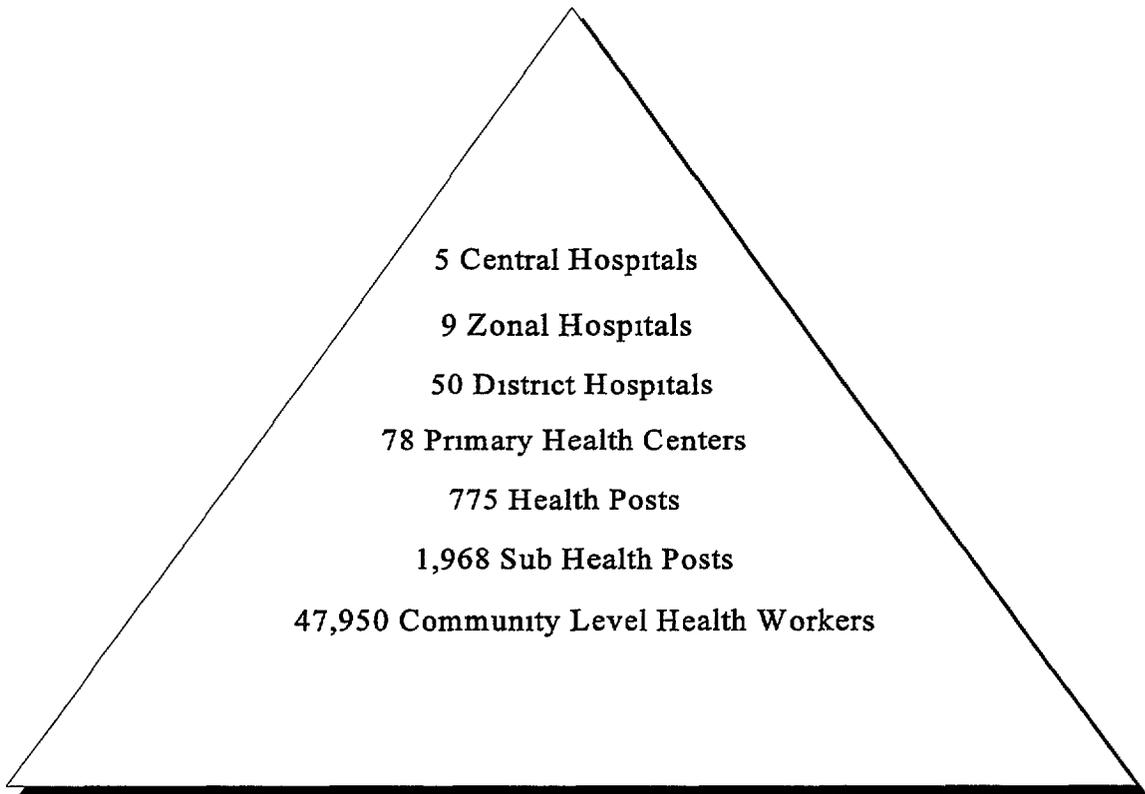
Source: HMG Ministry of Health, *Annual Report of Department of Health Services 2051/2052 (1994/1995)*

#### B Health Services Delivery System

HMG delivers primary health services primarily through the Ministry of Health's network of health facilities. These are organized into a hierarchical referral and service delivery system as indicated in Figure 1.

FIGURE 1

## Health Services Delivery System



Source Unpublished documents provided by the MoH Logistics Management Division

In order to ensure optimal levels of coverage with priority PHC services, by 1997 the MoH plans to (1) Greatly increase the number of health facilities, particularly sub-health posts, in order to have at least one facility in the jurisdiction of each of the Kingdom's 3995 Village Development Committees, and (2) Up-grade 197 health posts to primary health centers' in order to have one in each electoral constituency, thereby more than tripling the number of such centers<sup>5</sup>

Although very extensive, the health services delivery system at present cannot be considered optimally productive. For example, the primary health centers, health posts and sub health posts (a total of 2,821 facilities) reported only 4,170,142 outpatient visits in 1994/1995<sup>6</sup>. Assuming an optimal service year of 285 days (not including 52 Saturdays and approximately 23 holidays and other closures) for primary health centers and health posts, and 225 days (not including an additional 60 days for various forms of leave) at sub health posts, each facility produces only 6.1 outpatient visits per average day. In addition, this average figure masks large variations over time and among health facilities. For example, 280,675 outpatient visits were reported in the month of Poush, while 525,958 were reported in the month of Jestha.<sup>7</sup> Over extended periods of time, many health facilities appear to have extremely low productivity.

Several problems appear to contribute to the low productivity of health facilities. Vacant posts are one frequently cited problem. In 1991, one study stated

The majority of regional directorate and medical store posts in the Mid and Far Western Regions are vacant. Overall, 22 percent of Health Assistant, 31 percent of Auxiliary Health Worker, 69 percent of Auxiliary Nurse Midwife and 7 percent of Village Health Worker Posts are vacant.<sup>8</sup>

With respect to the supply of drugs, the same study noted

Budget allocation is uniform between the Health Posts irrespective of the population coverage, morbidity and attendance of persons. As a result, there are insufficient drugs in some Health Posts while in others there is a surplus.<sup>9</sup>

Thus, there are limitations in the management and supply of the two most important inputs, personnel and medicines, required to produce PHC services and, in the process, ensure adequate utilization of the health service infrastructure. Few would contest that increased availability of qualified staff and pharmaceutical products would yield increased production of PHC services.

In the face of these major constraints to PHC productivity, HMG and its MoH are embarked on the "largest scale public health programme in Nepal in the last few decades"<sup>10</sup>. Clearly, the MoH faces a very ambitious development challenge, a situation in which success will demand (1) early identification and focus on a limited set of priorities, (2) a successful search for simple, acceptable solutions to existing problems, and (3) maximum possible utilization of all existing health resources in Nepali society. There will be many opportunities for the "best" to be the enemy of the "good." That is, there will be many opportunities for attempts to achieve ideal objectives to frustrate less dramatic but practical progress.

It was within this general context that, in 1994, both the Sasakawa (now Nippon) Foundation and KfW negotiated agreements with HMG to support the implementation of a drug cost-sharing scheme throughout the country. UNICEF took on responsibility for assisting MoH with the design and implementation of this ambitious undertaking, which came to be known as the Community Drug Programme.

The first public announcements of the CDP were made in July 1994. In the ensuing ten months, however, the progress made was less than envisioned in the agreements between HMG and the two donors. In May 1995, UNICEF hosted a meeting attended by representatives of other assistance agencies plus managers of existing drug cost-sharing schemes. In the course of discussion, there emerged no clear consensus on what model or models were most appropriate for implementation through the CDP. Indeed, it turned out that no party knew for sure what results were being obtained by the various programs currently operating in Nepal.

As noted in the foreword, the one concrete result of the meeting was a recommendation to carry out the present study, which (1) documents the resources currently available in the public and private sectors for supporting drug cost recovery activities and (2) proposes the best options for program design and implementation.

#### IV STUDY METHODS

In its protocol, the Community Drug Programme identifies as a principal objective improvement of the delivery of primary health care services. It seeks to do this by ensuring year-round availability of essential drugs at the primary health center, health post and sub health post levels. The philosophy of the CDP includes, as guiding principles, "self reliance, self help and self management by the people"<sup>11</sup>

In light of this, an overarching goal of this study has been to develop a quantitative assessment of the impact that existing drug cost-sharing schemes may have achieved on the availability and production of public health services as indicated by (1) improvements in the availability of essential drugs at health facilities, (2) increases in the stocks of essential drugs at these facilities, (3) increases in the utilization of these facilities and (4) any reduction in the requirement for MoH financial resources that might otherwise be directed to other priority public health service needs. The study also seeks to develop quantitative and qualitative data to support the recommendations for design and implementation of drug cost-sharing programs that would increase and/or optimize their impact on the public health of the Nepali population.

Towards these ends, the study seeks answers to the following questions

- 1 What are the drug resources currently available to the MoH?
- 2 What is the MoH's capacity to manage available drug resources?
- 3 What types of drug cost-sharing schemes are currently operating in Nepal?
- 4 How do existing drug cost-sharing schemes perform?
- 5 What drug management resources are available in the commercial sector to support MoH-sponsored programs?
- 6 What resources are available at local government and community levels to assist in drug management?
- 7 What health-seeking behaviors in the community are relevant to drug cost-sharing?

Once RPM, UNICEF and MoH staff had agreed to the study questions, RPM prepared a detailed study protocol. This document, completed in October 1995, served as the basis for the development of the data collection questionnaires and the sample design.

To gather the information to answer the study questions, the team used three principal methods, including

- 1 *Review of a large number of reports and other documents available through HMG, donors and NGOs*

This proved to be a very enlightening exercise. Much useful information has been collected and analyzed by disparate groups and organizations working in Nepal. The information proved very helpful in answering several of the study questions. For example, the data required to establish the rates of cost-recovery for existing drug cost-sharing were available from annual reports and evaluative studies. What was required was to apply a standard assessment methodology to this data, so that the calculated rates could be objectively compared.

## 2 *Sample survey of health facilities, drug cost-sharing sites and households*

As anticipated, some information required to answer the study questions was not available in existing documentation. Questionnaires were developed to collect information, among other items, on the availability and cost of drugs in the field as well as on the quantities imported and manufactured. The collection of reliable primary data was more challenging than anticipated. Source records were generally disorganized. For example, attempts to collect data on the number of days individual tracer drugs had been out of stock during the previous year were unsuccessful.

## 3 *Interviews held with managers and decision makers in the public, private and NGO sectors*

Many of the ideas presented in this report originated or were confirmed during these interviews. These informants also provided crucial insight into the quality and reliability of data collected through the other two methods. During these interviews, it became clear that extensive personal and institutional experience exists that should be exploited to successfully extend the coverage of existing cost-sharing schemes and enhance their effectiveness. It also became clear that many of the lessons learned at the international level with the implementation and operation of drug cost-sharing schemes have already been proven valid in the Nepali context.

The fundamental performance objective of all drug cost-sharing schemes is to improve the availability of essential drugs. A priority of the study was, therefore, to determine the impact that existing drug cost-sharing schemes have on the availability of essential drugs.

Reliable data on the availability of drugs, both at facilities with and without drug cost-sharing schemes, had to be collected. Similar data was collected from private retail outlets to assess their potential as alternative sources of required products and as possible sources of supply for drug cost-sharing schemes. Since it was neither feasible nor necessary to collect data on all 259 drugs on the MoH's essential drug list or at all 3,000 facilities, the RPM/VaRG study team drew samples.

In the case of drugs, the sample consisted of lists of tracer drugs, which the study team developed through consultation with MoH staff. Separate lists were developed for different levels of service. The list developed for district hospitals, which also applied to regional warehouses and retail drug shops, consists of 64 products. Other lists include PHCs with 54 products, health posts with 39 products and sub health posts with 26 products. These lists provided the basis for collecting data on drug availability and drug prices at different types of sites. They are appended as Annex 1.

For MoH facilities without drug cost-sharing schemes, the study team drew a representative sample based on the following criteria:

- 1 Facilities should be visited in five of Nepal's 75 administrative districts. Eligible districts were those containing sufficient health facilities without drug cost-sharing schemes.
- 2 Each of Nepal's five development regions should be represented in the sample, thus one district was to be selected from each region.
- 3 Each of the three principal ecological zones of Nepal should be represented in rough proportion to their share of the national population, thus one district was selected from the mountainous zone and two each from the hills and the Terai.

- 4 Starting with the Eastern Region, first an ecological zone was randomly selected and then an eligible district in that zone was randomly selected
- 5 A similar procedure was followed in each of the other four regions
- 6 Within each district one health post was randomly selected (two in the case of two districts that lacked a PHC center)
- 7 In each district one sub health post was randomly selected from among those associated with each of the selected PHC centers and health posts
- 8 All five district hospitals and three PHC centers in the selected districts were included in the sample
- 9 The availability of essential drugs would be assessed at all five regional warehouses

For MoH facilities assisted by drug cost sharing sites, the team began by selecting three schemes for study. The schemes selected were judged to (1) be potential alternative models for replication, (2) have relatively long periods of continuous operation, and (3) be significant in scale. The team selected participating health facilities for each of the schemes as follows:

- 1 For the Cost Sharing Drug Scheme, supported by the Britain Nepal Medical Trust, the team selected eight of 31 participating health posts by random method, plus two of three district hospitals
- 2 For the Lalitpur Medical Insurance Scheme, supported by the United Mission to Nepal, the team selected three of five participating health posts by random method
- 3 For the Community Drug Supply Scheme, supported by WHO/HMG, the team elected to collect data in four of 18 participating districts. Selection of three of the four districts was random. Within this geographic frame, the team then selected 17 of 122 participating health posts, plus one primary health center. Fourteen of the health posts were selected by random method. (The other three sites were health posts in Dolakha District with drug cost-sharing schemes supported by the Swiss Development Cooperation's Integrated Hill Development Project. Since they function in a manner identical to WHO/HMG sites, they were included in the sample.)

In the vicinity of the 31 health service facilities in this sample, data collectors visited 56 drug retail shops. They did not use random survey methodology in selecting these sites.

To obtain a general idea concerning health seeking behavior, the data collectors visited a total of 245 households in villages located within one hour's walk from the sites included in the health facility sample. This household sample is not expected to be representative of the population at large, but is expected to provide some very general indications of the population's current willingness to pay for health services and of the magnitude of any payments that they may currently be making for such services.

To obtain an idea concerning the manufacturing and distribution capacity of the private sector and to assess its potential to contribute to the availability of essential drugs the study team identified the five largest of 22 manufacturers. These included four manufacturers located in Kathmandu and one in Birgunj. Similarly, the team identified the five largest wholesalers in each of Nepal's five development regions. The team conducted interviews with managers and decision makers at all of these commercial organizations.

In November 1995, VaRG recruited twelve experienced data collectors, and with help from RPM, trained them at health facilities in Kathmandu Valley not included in the study sample. VaRG organized the twelve data collectors into six two-person teams. Between December 1995 and February 1996, these teams administered the questionnaires for all sites in the sample. VaRG staff then used a dBASE data entry program to enter data into SPSS. They had completed this task by the end of March. RPM staff worked during April and the first part of May to analyze the data and develop the study's findings. The entire RPM/VaRG team presented those findings at a workshop at the Himalaya Hotel on May 13. It has taken an additional six weeks for RPM staff to prepare the report. Thus, the *Nepal Cost-sharing in Pharmaceutical Distribution Study* has been brought to conclusion in a little more than one year after its conceptualization in May 1995, as illustrated in Figure 2.

The following sections of the report will describe the findings of the study in four general areas: (1) The need for alternative sources of essential drugs, which is caused by both the MoH's inability to provide these products free of cost, and the private sector's inability to provide them at a reasonable price, (2) The relative strengths and weaknesses of existing drug cost-sharing schemes that might serve as models for more widely implemented schemes, (3) Principles and implementation criteria that both Nepali and international experience suggest should be applied to ensure the success of future drug cost-sharing initiatives, and (4) Some recommendations on next steps that the MoH and UNICEF may wish to consider in their efforts to greatly extend the coverage of drug cost-sharing activities.

**FIGURE 2**

**Chronology of the Nepal Cost-sharing in Pharmaceutical Distribution Study**

| Activity or Event                   | 1995 |   |   |   |   |   |   |   | 1996 |   |   |   |   |   |
|-------------------------------------|------|---|---|---|---|---|---|---|------|---|---|---|---|---|
|                                     | M    | J | J | A | S | O | N | D | J    | F | M | A | M | J |
| <b>Donor meeting</b>                |      |   |   |   |   |   |   |   |      |   |   |   |   |   |
| <b>USAID/RPM agreement</b>          |      |   |   |   |   |   |   |   |      |   |   |   |   |   |
| <b>Study design and protocol</b>    |      |   |   |   |   |   |   |   |      |   |   |   |   |   |
| <b>UNICEF/VaRG contract</b>         |      |   |   |   |   |   |   |   |      |   |   |   |   |   |
| <b>Interviewer training</b>         |      |   |   |   |   |   |   |   |      |   |   |   |   |   |
| <b>Data collection in the field</b> |      |   |   |   |   |   |   |   |      |   |   |   |   |   |
| <b>Data entry/initial analysis</b>  |      |   |   |   |   |   |   |   |      |   |   |   |   |   |
| <b>Results presentation</b>         |      |   |   |   |   |   |   |   |      |   |   |   |   |   |
| <b>Final report preparation</b>     |      |   |   |   |   |   |   |   |      |   |   |   |   |   |

Source RPM Nepal Country Program Documentation

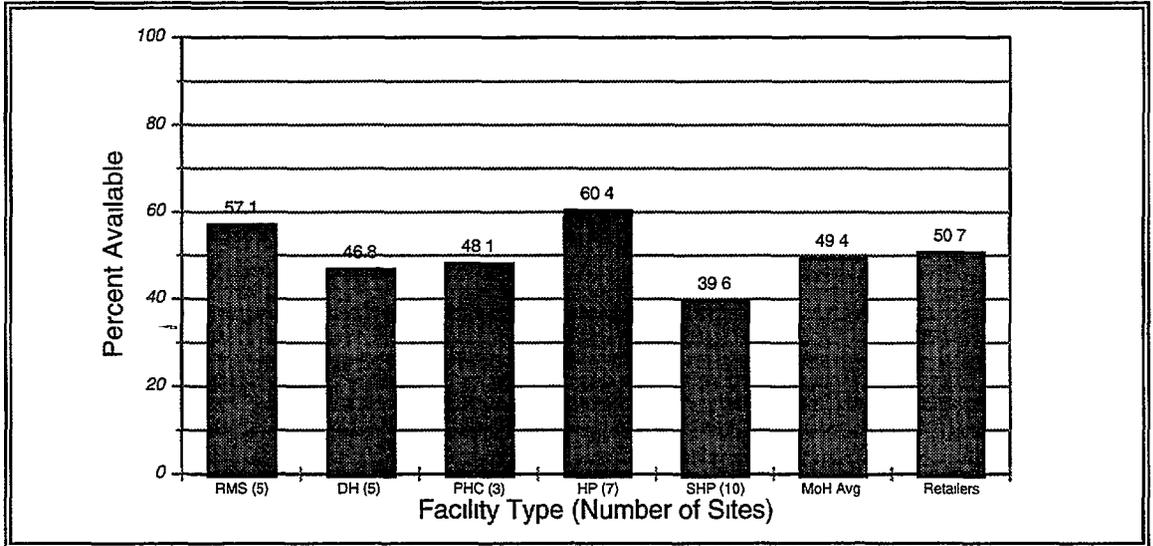
## V THE PHARMACEUTICAL SECTOR

The Nepal pharmaceutical sector may be divided in two large components (1) The public sector component dominated by the MoH, but with smaller parts in other ministries and public sector institutions such as the military, and (2) The private sector component, which consists of manufacturers, importers, wholesale distributors and retailers. The two components interact and overlap. The Government of Nepal owns a large manufacturer, Royal Drugs, Ltd, and it regulates the operation of all facilities dedicated to the manufacture and distribution of drugs. The private sector, on the other hand, sells many of its products to the public sector for use in the network of health service facilities. Both components of the pharmaceutical sector attempt to make drugs widely available to the population. This section summarizes the study's findings concerning both the public and private sectors' capacity to make essential drugs generally available to the Nepali population.

As described in the section on study methods, the ultimate measure of the effectiveness of the pharmaceutical sector is the availability of drugs when and where they are needed and at a cost that is affordable to those who need them. To measure the effectiveness of both the public and private components of the pharmaceutical sector, this study visited MoH health facilities and private drug retail shops and determined the availability of sets of tracer drugs at each site on the day of the visit. The results of this assessment are illustrated in Graph 1.

### GRAPH 1

**Availability of Tracer Drugs on Day of Survey at Private Sector Retail Shops and MoH Facilities Without Drug Schemes**



Source: Survey data collected for this study.

This graph shows that neither facilities in the public nor the private sector achieve very good results in making essential drugs consistently available at their facilities. The average in both the public and private sector is almost exactly 50%. The discussion that follows attempts to identify factors contributing to this situation, and to assess the feasibility of achieving improvement.

## A Public Sector Pharmaceutical Distribution

The MoH attempts to make essential drugs available free of charge to patients at approximately three thousand health facilities throughout the Kingdom. As indicated in Graph 1, at the time of this survey, only half of the selected tracer drugs were found at MoH facilities. It is possible that this result may have been negatively influenced by the timing of the survey, which probably occurred somewhat after the midpoint in most facilities' supply cycle. Regardless, however, of the limitations of this indicator, it is clear that there is room for substantial improvement at all levels within the MoH distribution and service delivery system. What are the prospects for such improvement within current contexts? The following discussion focusses on financial constraints and other relevant factors.

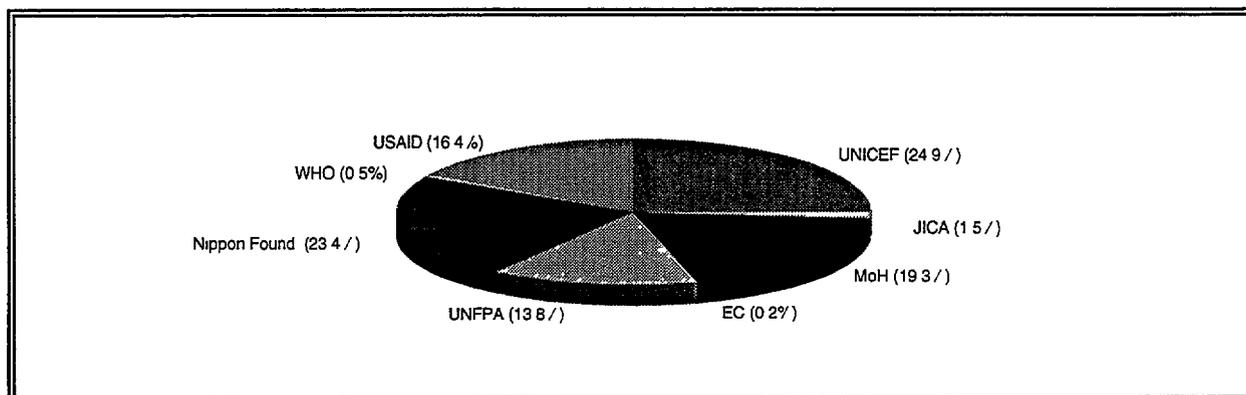
### 1 Financial Constraints

The World Bank has estimated that the cost of a minimum package of essential clinical services, excluding public health services and associated vaccines, is approximately US \$8.00 per capita in countries at a stage of development similar to Nepal's.<sup>12</sup> The World Bank's package consists of a number of components, one of which is pharmaceuticals. The pharmaceuticals component accounts for one-eighth of total estimated costs, or \$1.00 per capita. This suggests an annual total requirement for essential drugs of \$20,000,000 for Nepal. Although this is a very rough estimate, it provides a useful reference point from which to assess the current situation.

The investigators found no comprehensive aggregated data on public sector pharmaceutical expenditures. Data from donors and several departments of the MoH indicate that total public sector expenditures for 1994 were approximately US\$ 5.4 million, excluding the direct expenditures made by several of the five central and nine zonal hospitals but including approximately US\$ one million for vaccines. Thus, total pharmaceutical expenditure appears to have been about one fourth of the amount required to support a minimum package of essential pharmaceutical services for the Nepali population, as estimated by the World Bank model. This analysis suggests that, in accounting for shortages of essential drugs at MoH clinical facilities, insufficiency of funds with which to acquire stocks is a major factor. Likely, it is the major factor. What are the prospects for obtaining increased funding for essential drugs from the public sector?

Graph 2 shows the distribution of the 1994 essential drug expenditure by the source of funding. Approximately 80% (a little in excess of US\$ 4,000,000, including vaccines) of the funding for essential drugs in the public sector was provided by donors. Of the overall requirement of US\$ 20,000,000, HMG provided the MoH with just over 5% (US\$ 1,037,538) from the National Treasury.

## GRAPH 2

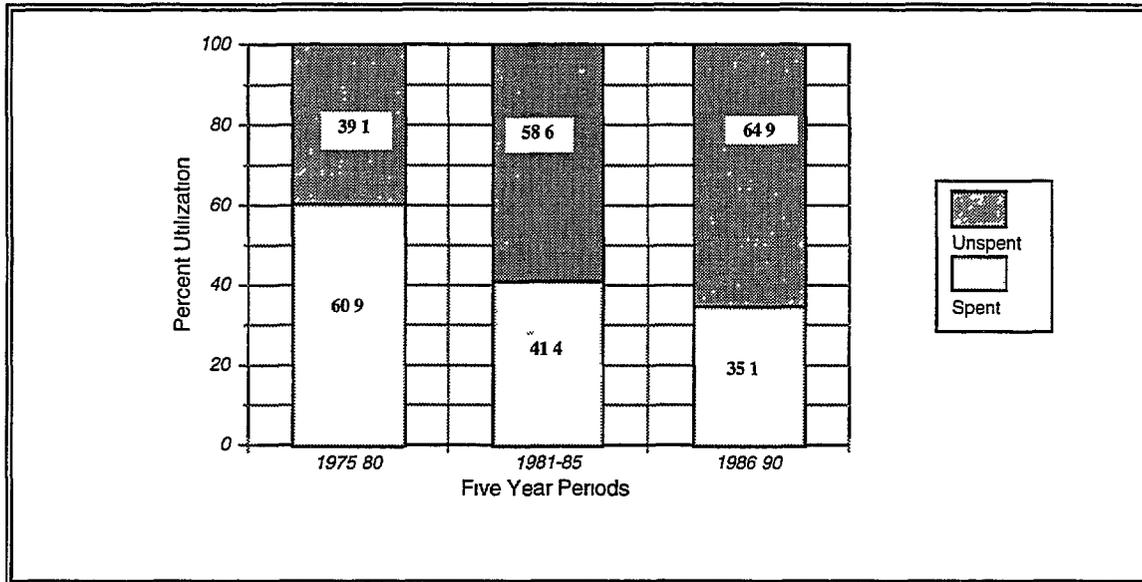
**1994 Central Level MoH Drug Supply  
Percent Distribution by Funding Source**

Source: V. Dias, *Nepal Ministry of Health Pharmaceutical Supply Directory* RPM Project, June 1995

Informal conversations with donors suggest that they are an unlikely source of funding for increased expenditures on pharmaceuticals, except possibly for specific priority programs or to meet short term needs. In fact, in one conversation it was indicated that the MoH is committed to purchasing an increasing share of its vaccine requirements. Donors have also indicated a certain degree of concern about the absorptive capacity of the MoH. Graph 3 shows a decreasing rate of utilization of external funds allocated by donors to health projects during the last three five-year plan periods.

GRAPH 3

### Percent Utilization Rates of External Financing for Health

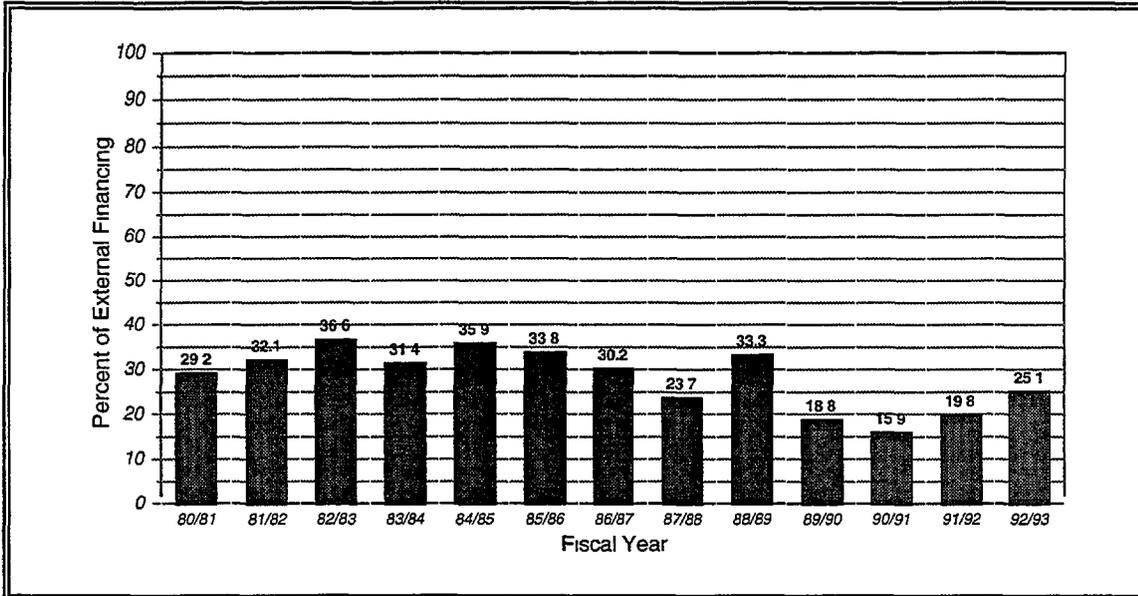


Source: S P Shrestha and B R Shrestha, *Analysis of Health Economics in Nepal*, Ministry of Health, October 1995

One might hope that by increasing utilization of available external financing the MoH might capture additional funds for essential drugs. Given the relative ease with which funds for commodities are often spent, however, a more plausible scenario is that drugs are under represented in the un-utilized portion of external financing, and that, unless the MoH reverses the trend in overall utilization, the willingness of donors to finance essential drugs may decrease. In fact, as shown by Graph 4, the trend in donor participation in the financing of health services in the public sector appears to be slightly negative, although with some recovery during the most recent years for which data are available.

GRAPH 4

**External Financing of Public Sector Health Expenditure  
Fiscal Years 1980/81 through 1992/93**



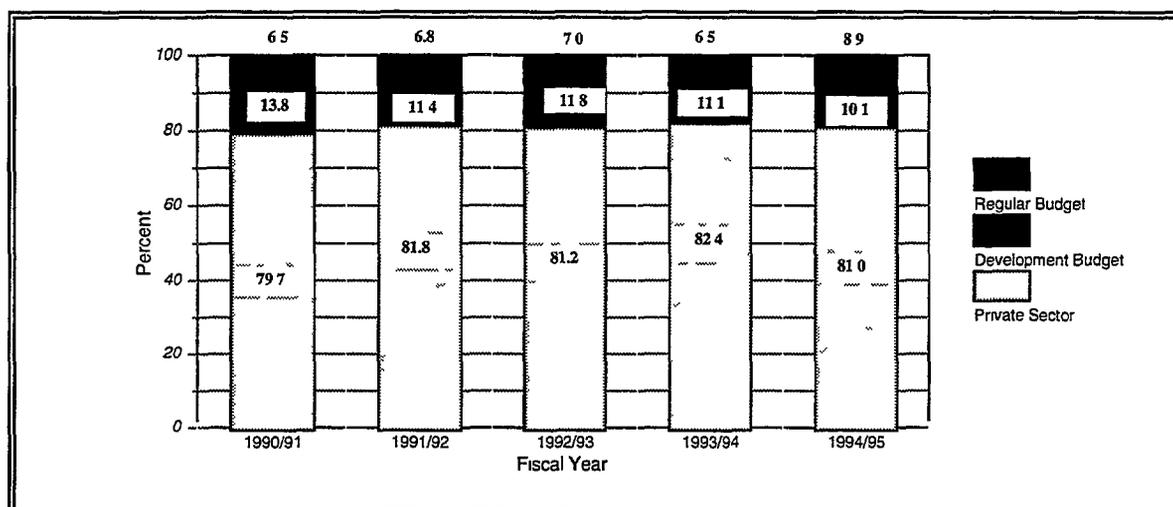
Source: S P Shrestha and B R Shrestha *Analysis of Health Economics in Nepal* Ministry of Health October 1995

In addition to the dim prospects of acquiring increased external financing for essential drugs, some HMG officials have expressed concern for the dependency that accompanies such financing. The acceptance of such financing involves a certain sacrifice of sovereignty and control over the government's own policies and programs as a result of satisfying donor's conditions. On the other hand, failure to meet such conditions for continued funding requires either the development of alternative sources of funding or the termination of the affected services. Either alternative has its own costs and risks. In the medium and long term, increased funding from external sources appears neither likely nor desirable. What, then, are the prospects for increased funding from the National Treasury?

Graph 5, when considered along with the proportion of total government expenditures dedicated to health, clearly suggests the likely answer to requests for substantial increases of financing for essential drugs from the National Treasury. Graph 5 indicates that HMG's share of gross domestic product has shown an apparent tendency to decline over the last five years, although the relation between the "regular budget" and GDP appears to have been fairly stable. (Figures for 1994/95 are estimates and are likely to be revised downward, once actual expenditure data become available.)

GRAPH 5

**Government Development Expenditure and Regular Expenditure as  
Percent of GDP for Fiscal Years 1990/91 through 1994/95**



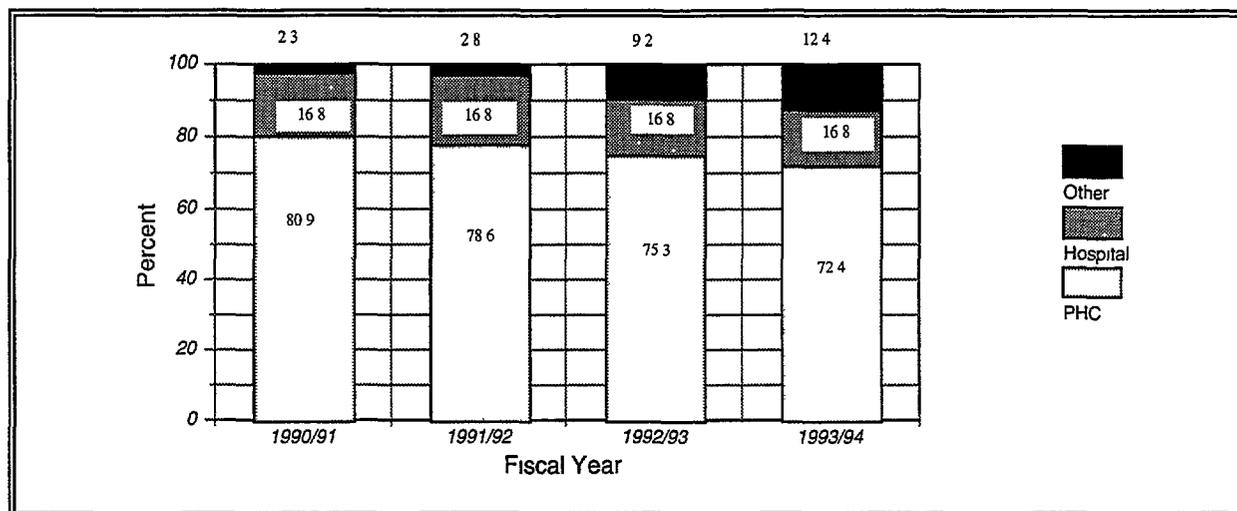
Source: S P Shrestha and B R Shrestha, *Analysis of Health Economics in Nepal*, Ministry of Health October 1995

The proportion of total government expenditures allocated for health has remained fairly steady during the past five years, remaining between three and five percent with no clear trend apparent (Different sources, using different techniques, estimate somewhat different rates). The figure for Nepal, which is 4.7%, is either very close to or in excess of those for the closest neighbors: Bhutan, 4.8%, Bangladesh, 4.8%, India, 1.6%, Pakistan, 1.0%, and Sri Lanka, 4.8%<sup>13</sup>. Given the general slow improvement in the overall economy of the country and the central government's apparently static share in that economy, it appears the National Treasury would be an unlikely source of large increments in financing for essential drugs.

The prospects for a substantial reallocation of funding in favor of essential drugs from within the health sector also appear to be dim. Graph 6 shows the proportion of funds allocated to primary health care. This represents, in the investigators' experience, an exceptional effort on the part of the MoH to allocate expenditures where they will have the greatest impact. Most countries allocate far greater proportions of their expenditures to hospital services, which have much less impact on general health status and which tend to be consumed disproportionately by those members of society that have relatively more resources. While this speaks very well of the MoH's priorities, it also suggests that there would be little additional funding for essential drugs within the budget for health care.

GRAPH 6

**Percent Distribution of Health Expenditures  
Fiscal Years 1990/91 through 1993/94**



Source: S P Shrestha and B R Shrestha *Analysis of Health Economics in Nepal* Ministry of Health October 1995

In summary, the funds currently available for essential drugs in the public sector are far below the US \$1 00 per capita target suggested by the World Bank's package of essential pharmaceutical services, and there appears to be little prospect of significant increases from current HMG budgets or collaborating donors. There are, of course, many things that may be done to make better use of those drugs currently distributed through MoH facilities. Some potential improvements are mentioned below, but they are unlikely to alleviate significantly the demand for drugs. On the contrary, the MoH's goal of operating at least one health facility within the jurisdiction of every VDC, to be achieved through dramatic increases in numbers of sub health posts, should have the effect of increasing demand.

## 2 Other Constraints

As previously indicated, there are many things that may be done to improve the efficiency with which currently available financing for essential drugs is used. These are noted here, primarily to demonstrate the commendable work that the MoH has undertaken to make maximum possible use of its current resources. Where relevant, the possible impact of drug cost-sharing schemes is mentioned.

### a The Procurement Process

The MoH procurement process for essential drugs affects the supply of drugs in two important ways. First, delays in the procurement process create temporary shortages. Given that only one or two deliveries are made to each health facility per year, regional warehouses will often hold shipments pending the arrival of the last product. In cases where the delivery to the health post is not delayed, it means that the late-arriving product may remain in a regional warehouse until the next annual delivery. Delays of this type contribute significantly to stock outs at clinical facilities and to the expiration of products.

Second, the unit prices obtained through the procurement process determine the overall quantities that can be acquired given the MoH budget constraints. Currently, the prices paid by the MoH are relatively good, being only 2% greater on average than those charged by a sample of international public service procurement agencies. Further savings are, however, possible. On the basis of a weighted average, the prices paid by MoH are 25% greater than those paid by UMN or than the cost of drugs available from UNIPAC, after adjusting for transportation (15%) and handling (6%). For example, Amoxicillin 250 mg capsules accounted for 64% of the cost of a mix of 16 essential drugs that the MoH purchased locally for PHC facilities. If MoH had purchased this product from UNIPAC, it would have realized overall savings of 25%. The purchase of paracetamol 500 mg tablets from the same source would have reduced MoH's total costs by an additional 5%.

*b The Storage and Distribution Processes*

Currently, the MoH has the capacity to deliver drugs only once or twice per year to each health facility. Constraints of both information and personnel mean that all health posts or all sub health posts get nearly identical shipments of drugs regardless of local epidemiology, local service delivery capacity, and/or the size of the facility's target population. Local capacity for redistribution among health facilities, appears to be sub-optimal. The logistics system is understaffed, with many important positions unfilled at both the regional and district levels. For example, even in the case of positions for unskilled labor at regional warehouses, four out of 10 positions were vacant at the time of the survey. There also appears to be a shortage of funds for porters to distribute drugs in the hill and mountain districts.

The MoH, with financial support from USAID and technical assistance from John Snow Public Health Group, the RPM Project, and two local NGOs, MASS, and New Era, has initiated a major effort to improve the logistics system. Teams made up of staff from MoH and these organizations are cleaning and reorganizing storerooms, designing and implementing a logistics information system, improving procurement procedures, and rationalizing transport arrangements. These efforts should increase drug availability by reducing uneven distribution and expiration of essential drugs.

*c Rational Use*

This study has not attempted to determine the financial losses attributable to irrational use of drugs. These losses are certainly very large in both the public and private sector distribution systems. In fact, of the three elements in the distribution process that are discussed here, irrational use probably makes the greatest contribution to inefficiency. The principal objective of drug cost-sharing schemes is not to improve rational use, but these schemes may have an impact on rational use by increasing the awareness of both patients and prescribers of the value of drugs.

Efforts to ensure rational use in public sector facilities are ultimately based on influencing care providers to prescribe and dispense drugs according to norms expressed in standard treatment schedules. The MoH has produced standard treatment guidelines, but the study's interviewers found these key reference materials at only two of the 56 health facilities which they visited. In this respect, little appears to have changed since 1991 when Dr. K. K. Kafle and S. P. Shrestha observed

The majority of medical officers, Health Post Incharges and AHW/ANMs are not aware of the standard drug treatment schedule. Nor is there a copy available in their institution.<sup>14</sup>

Another problem is that the official edition of the standard drug treatment schedule exists only in English and is not very well illustrated. Perhaps the greatest constraint of all is that, as the services delivery system presently functions, supervisory personnel virtually never monitor individual care providers' prescribing practices, or provide them with the feedback required for promoting rational use.

In summary, in the public sector, drug shortages are serious and chronic. These shortages have multiple causes. The most important is insufficient funding, but problems such as inefficient logistics and irrational drug use also intervene. MoH's program for increasing the number of health facilities will only compound these problems. The MoH, in general, and the Logistics Management Division, in particular, have their hands full. Drug cost-sharing initiatives should be designed and implemented in such a way as to relieve the constraints, not make them worse. Substantial cost-recovery will certainly help. In order to achieve substantial cost-recovery, however, implementation and support mechanisms must be designed that make minimal demands on overextended MoH resources.

### **B Private Sector Pharmaceutical Distribution**

The private sector, and not the public sector, is where most Nepalis get most of their drugs most of the time. The MoH's DDA has registered 1,086 importers, 1,315 wholesalers, 8,014 retail shops and 10,059 drug products. In the less urbanized areas of the country there are probably many unregistered shops that sell some drugs.

Reliable data on the volume of private sector sales are not available. Rough estimates can be made that indicate Nepalis' willingness to pay the fees implicit in drug cost-sharing schemes. This study takes into account two such estimates. First, data from a 1992 DDA study suggest that between 1989 and 1992, Nepal's drug imports were growing at a rate of 19.8% per year, prior to adjustments for inflation.<sup>15</sup> It further estimated retail sales for 1992 to have been Rs 1,497,000,000. Using the earlier growth rate to project future retail sales yields the estimate of Rs 3,084,000,000 for 1996.

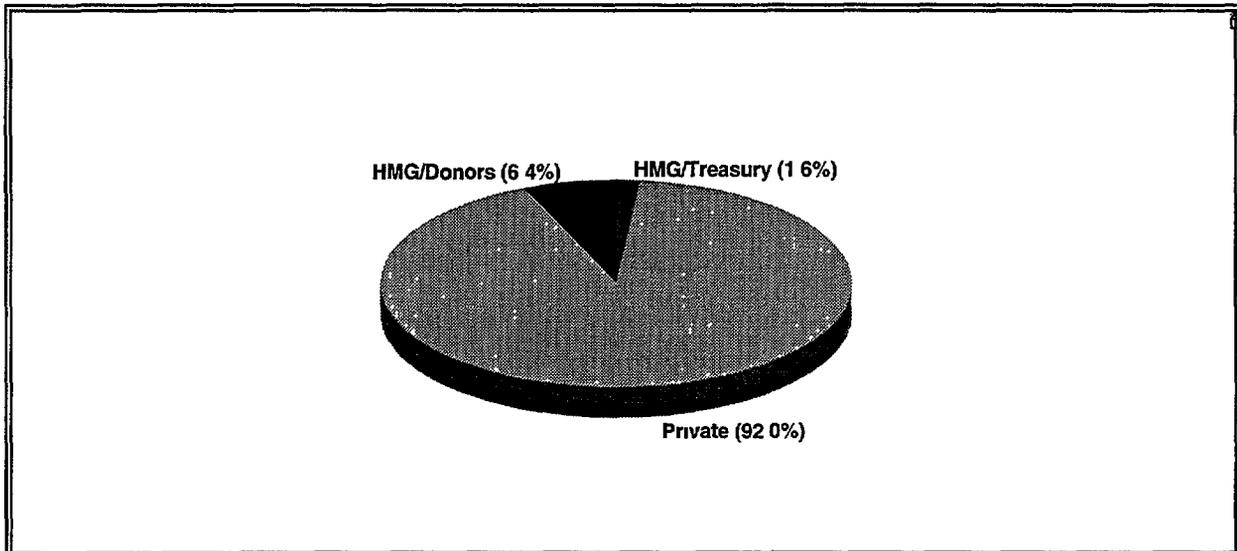
An independent estimate can be made using data from a study supported by the Primary Health Care Project of the Department of Health Services.<sup>16</sup> This study collected data from all 158 drug retailers in 29 VDCs with a total population of 158,913. The reported average daily sales were Rs 96,080. Assuming 290 effective market days per year, estimated sales were Rs 175 per capita per year. Applied nationally, this suggests total annual retail sales in Nepal of Rs 3,500,000,000. This figure lends credibility to the first estimate based on the DDA study.

Are these estimates reasonable, given other estimates of the private health sector in Nepal? A WHO/HMG study suggests that private sector *expenditures for health* were approximately Rs 6,390,000,000 for 1993/94.<sup>17</sup> The 1996 estimated (DDA study) private *drug expenditures* are less than half this amount and, therefore, consistent with the WHO/HMG study.

All of the above demonstrates that Nepalis are not only willing to pay for drugs, but that they are currently paying for drugs. In fact, they are paying approximately 10 times as much for drugs as HMG and the donors combined, as shown in Graph 7.

GRAPH 7

## Pharmaceutical Sector by Source of Expenditure



Source Developed from Department of Drug Administration, *Quantification of Drug Requirements in Nepal A Consumption Survey* Ministry of Health 1992, and V Dias, *Nepal Ministry of Health Pharmaceutical Supply Directory* RPM Project, June 1995

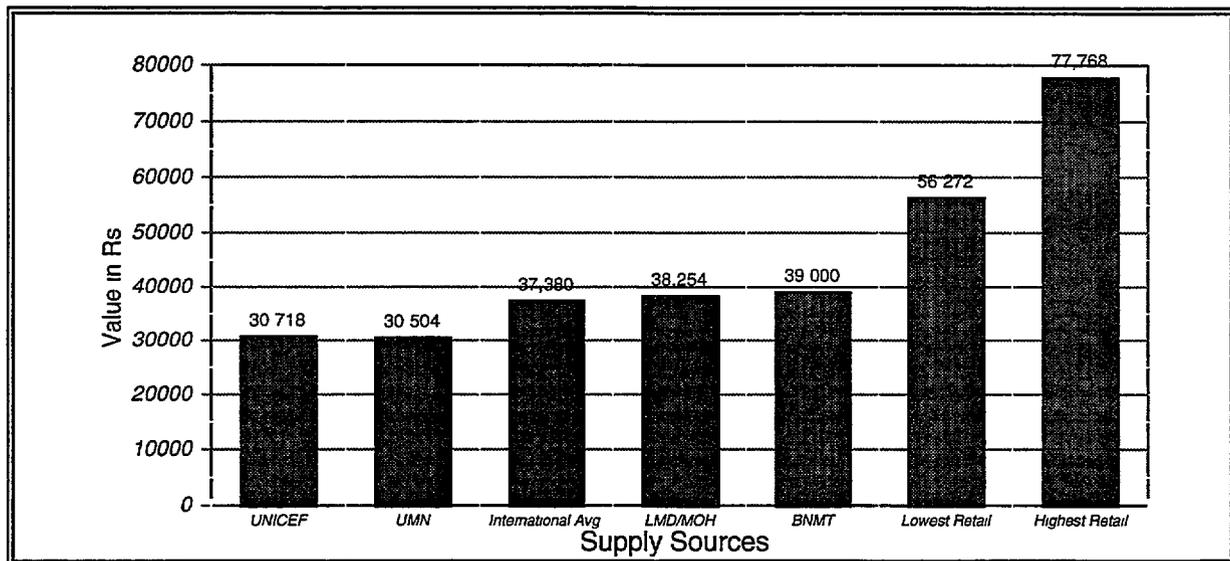
Unfortunately, this vast consumer expenditure is almost certainly not very efficient. The sources of this inefficiency are numerous and include, among others, the sale of (1) products with little or no therapeutic benefit such as vitamin tonics, (2) expensive combination products, usually associated with symptomatic relief, (3) products that are therapeutically beneficial, but unnecessarily expensive, such as third generation antibiotics, and (4) products in sub-therapeutic doses, which in the case of antibiotics is not only financially wasteful, but also dangerous. Some of these problems are illustrated by an anecdote related by an expert informant, who told of being asked by a Nepali patient about the correct way to take a single capsule of amoxicillin that he had purchased for Rs 40, but which is available to the MoH from UNIPAC for less than Rs 2.

Ironically, HMG's well intentioned attempts to control the prices of drugs at each level in the private sector distribution process, by stipulating a maximum legal markup as a percentage of the drug's acquisition cost, may inadvertently contribute to the inefficiencies. The current price controls create strong financial incentives to promote high cost products and to discourage the consumption of inexpensive products. In fact, in the case of many inexpensive, but essential, drugs the cost of executing a sale may exceed the legally permitted markup. In this situation, drug shops may not even stock such products. (Interestingly, the Nepal Chemists and Druggist Association was formed with the objective of enforcing price uniformity, which also discourages competition and tends to result in higher prices.)

The study collected comparative data on the unit purchase costs of a subset of 16 tracer drugs purchased by LMD in 1994. In Graph 8, the unit purchase costs from different sources were applied to the quantities of the same drugs that were supplied to health posts. (The total for LMD is less than the total MoH indent, since the analysis only includes those drugs for which unit prices were available from all sources.) Although the differences in costs suggested by this modeling are dramatic, they are probably even greater in reality. For example, retail prices in rural areas, where effective supervision of price controls does not exist, are sure to exceed the highest prices in Kathmandu. In addition, the graph does not capture the loss of efficiency that occurs when patients, who do not receive the drugs they require in the public sector, purchase other, more expensive products in the private sector.

GRAPH 8

Cost in Nepali Rupees of a Package of HP Drugs  
By Source of Supply



Source: Developed from a number of sources including the survey data collected for this study, the 1995 International Drug Price Indicator Guide (MSH, 1995) and the 1995 UNIPAC Catalogue. Note: UNICEF prices have been adjusted upwards by 21% to account for shipping and handling costs. International Avg prices have been adjusted upwards by 15% to account for shipping costs.

As previously indicated in Graph 1, average retail outlet carries approximately 50% of the 64 tracer drugs for district hospitals. This is a situation that probably leads to unwarranted sales, as drug shops attempt to make a sale even though they do not have the prescribed product in stock, and as patients attempt to avoid further inconvenience in their search for that product.

One should not suppose, however, that drug shop owners are earning excessive profits. The vast majority appear to have very low gross incomes. The drug shops visited for this study, most of which were probably larger, DDA-registered shops, make an average of 20 sales per day. Based on the DDA estimate of total sales volume in the private sector and the number of registered shops in the Kingdom, the average shop's total sales may be estimated at approximately Rs 1,325/day. Their government-set 16% margin provides a daily gross income of Rs 183 (net of cost of goods sold) to cover their operating costs as well as profit. This estimate provides the maximum possible average.

In the *Siraha Study*, there were more than five shops per VDC, compared to the national average of two registered shops per VDC. The Siraha shops, probably including numerous unregistered shops, reported average sales of Rs 608/day for an estimated legal gross margin of Rs 84/day<sup>18</sup>. While many of these shops may not consistently follow the pricing regulations, it is clear that the average shop could not, even if they had a stock of the required drugs, afford to supply MoH drug cost-sharing schemes with essential drugs at concessionary rates, as the WHO/HMG scheme seems to assume, and as has been suggested several times in interviews.

As noted, it seems likely that price controls diminish in effect outside of the major urban areas. During fiscal year 1994/95 the DDA reported only 741 supervision visits were made to the 9,329 registered wholesalers and retailers. (Nationally, there are more than one thousand registered drug retail outlets per government drug inspector.) Percentage margin controls, however, also exist and are even narrower (only 8% for antibiotics) at the wholesale level. Assuming total private sector wholesale sales of approximately Rs 2,660,000,000 per year, the average registered wholesaler has annual sales of Rs 2,022,000 and a legally authorized annual operating margin (average 8%) of just under Rs 150,000 (US\$ 3,000), before deductions of any costs except the cost of goods sold.

The average wholesaler does not currently provide the service that is required to support drug cost-sharing schemes. For the Far Western, Midwestern, Western, and Eastern regions, data collected for the five largest wholesalers revealed that on average each wholesaler stocks just over 50% of the tracer drugs for district hospitals. For the Central Region, the figure is 17%. As this result is significantly below the average for the other regions, we must consider the possibility of faulty data collections. Discussion with local informants, however, suggests this low figure is quite plausible. This is so, they say, because the Central Region includes Kathmandu Valley, a relatively urbanized setting, where the nature of demand is influenced by the presence of large hospitals, which would dispose the larger wholesalers to favor relatively expensive products consumed in those facilities.

As shown in Table 3, even manufacturers appear to assign low priority to essential drugs. Manufacturers respond to the demand presented by the public and private sectors. In interviews, criticisms are frequent about HMG's payment record, which undoubtedly dampens interest in local production of essential medicines for the public sector. For the private sector, however, manufacturers respond to the demand expressed, not by prescribers, but by wholesalers and, possibly, some larger retailers. If these levels do not find the marketing of priority essential drugs to be profitable, manufacturers will not make those products. Such seems to be the case, except for the HMG-owned Royal Drugs, Ltd. which is a major supplier to the MoH.

**TABLE 3**  
**Products on MoH Essential Drug List**  
**Produced by the Five Largest Nepali Drug Manufacturers**

| Manufacturer                       | Total Drugs Produced | Essential Drugs Produced | % Total Essential Drugs Produced |
|------------------------------------|----------------------|--------------------------|----------------------------------|
| Royal Drugs, Ltd                   | 100 (approx )        | 47                       | 18.2%                            |
| Hoechst Nepal Ltd                  | 40                   | 4                        | 1.5%                             |
| Nepal Pharmaceuticals Lab, Pvt Ltd | 46                   | 10                       | 3.9%                             |
| Lomus Pharmaceuticals, Pvt Ltd     | 54                   | 13                       | 5.0%                             |
| Deurali - Janata Pharm, Pvt Ltd    | 27                   | 2                        | 0.8%                             |

Source: Survey carried out for this study. Note: Data from interviews with manufacturers. Manufacturers listed in descending order of reported 1994/95 sales volume.

It seems likely that, if a market for priority essential drugs was developed that also contained a mechanism to ensure prompt, reliable payment, such as drug cost-sharing schemes that are supplied through a private sector system, that Nepali manufacturers would respond to that demand. Although relatively small, about 10% of the total pharmaceutical market, growth of local manufacturers has recently been quite rapid. By far, however, most finished pharmaceuticals on the Nepali market are manufactured in India, and the raw materials for those manufactured in Nepal are frequently imported.

### C The Population's Willingness to Pay

As noted above, the population pays substantial amounts for drugs in the private sector. The study team conducted a small household survey to get a general impression of the population's willingness to pay for drugs at public health facilities. It should be emphasized that, due to resource limitations, the sample was very small (55 households in the mountains, 100 in the hills and 90 in the Terai). It was drawn from villages randomly chosen from among those villages one to two hours walking distance from the health facilities, with and without drug cost-sharing schemes, that were included in the study. The most relevant findings of this portion of the study include the following<sup>19</sup>

- 1 The availability of medicine was the third most commonly mentioned reason for choosing a particular source of treatment (Proper diagnosis was the most commonly mentioned reason, followed by geographic proximity.)
- 2 Seventy-five percent of the households indicated that their preferred source of treatment was a health post or sub health post, a figure certainly influenced by the households' proximity to these facilities.

- 3 Only 20% of the households expressed dissatisfaction with the services they received at their favored source of treatment. Of those that expressed dissatisfaction, the most common complaint, mentioned by 70% of respondents, was the lack of medicines.
- 4 Similarly, the most frequently mentioned suggestion to improve health facility services was to improve drug supplies.
- 5 Eighty percent of the population, including two thirds of the poor, indicate a willingness to pay all or part of the costs of the services that they receive. International experience confirms that a large majority of most populations is willing to pay, particularly if the quality of service is good.<sup>20</sup>
- 6 Consistent with the size of the private drug sector, a majority of households indicated they had spent money for drugs during the last four weeks. They also indicated that drugs accounted for 80% of total health expenditures during that period.
- 7 In the context of this survey, respondents appear to deny the use of traditional healers and private drug shops as a primary source of care. Since there may be negative perceptions associated with these practices, it is very possible that there are significant differences between respondents' self-reported behavior and their real behavior.

The data from the household survey may not be taken as more than an indication, but they do suggest that drug cost-sharing initiatives would receive popular support, particularly if they result in increased availability of drugs. International experience also suggests that the perceived quality of the drugs will have an important impact on the willingness to pay for them.

## VI PHARMACEUTICAL COST-SHARING IN NEPAL

### A Introduction

The underlying objective of all pharmaceutical supply systems is to provide products where and when they are required by health care providers. In Nepal, and most other developing countries, attempts to meet the pharmaceutical needs of the population without direct charges to the consumers have resulted in unacceptably poor levels of availability of essential drugs. It is thought that the absence of fees has led to irrational over-consumption of certain products, while even appropriate consumption patterns strain the financial resources of most governments beyond their limits. In Nepal, NGOs working in collaboration with the MoH began experimenting with cost-sharing systems for pharmaceutical and other services 20 years ago, in the hope of improving the quality of services.

In early 1992, Dr. Kumud K. Kafle catalogued and described twelve drug cost-recovery systems in a study prepared for UNICEF.<sup>21</sup> Five of the systems, four of which were somewhat similar in nature, had been developed by the Britain Nepal Medical Trust. Three of the remaining systems were also similar, generally following a model developed by HMG with collaboration from the World Health Organization. Dr. Kafle described the principal organizational characteristics of each of the systems, their initial and current pricing policies, and he presented financial data on the level of cost-recovery. An assessment of the degree to which the systems improved the availability of essential drugs was beyond the scope of his study. The study did provide some qualitative indications, however, that patient attendance at participating facilities was increasing, providing evidence of the population's willingness to contribute to the costs of drugs provided through the public sector health services delivery system.

With these experiences in mind, and with the chronic problems of pharmaceutical shortages continuing to affect the majority of the MoH's facilities, in 1994 both the Kreditanstalt für Wiederaufbau of Germany and the Sasakawa (later Nippon) Foundation of Japan negotiated agreements with HMG to finance a program to develop and implement cost-sharing systems for pharmaceuticals on a nationwide basis, with UNICEF Nepal providing technical support.

The current *Nepal Cost-Sharing in Pharmaceutical Distribution* study is intended to support this effort. As such, the central element of the study is a qualitative and quantitative assessment of the most important existing drug cost-sharing systems. It is hoped that the assessment will yield lessons learned that can be applied in the effort to extend the coverage of drug cost-sharing throughout the country. The study team examined cost-sharing programs that have been implemented by WHO, UMN and BNMT. The team selected these three programs in the belief that they would provide the most useful lessons. Each of these programs is described below.

### B The United Mission to Nepal

The UMN has developed the Lalitpur Medical Insurance Scheme. It was the first, and for a long time the only, insurance scheme designed for Nepal. The target population was limited to several, primarily rural, communities in the southern part of Lalitpur District. It is intended to achieve the following three objectives:

- 1 To ensure a continuous drug supply at the health post level throughout the year, through the mobilization of community resources,

- 2 To distribute costs for health services in the community and thereby contribute to *equity* and *equal opportunity* for the poor, and
- 3 To increase the awareness of health services available in the community and to encourage appropriate utilization of such services, including the base hospital<sup>22</sup>

Thus, the Lalitpur Scheme set out, from its inception, to address the three principal concerns of the public health services sector as identified in the international literature (1) effectiveness through the availability of pharmaceutical products, (2) equity through the distribution of costs and access, and (3) efficiency through appropriate utilization

Health Post Committees (HPCs), as village health committees are known under the Lalitpur Scheme, set the annual household insurance premiums. In 1995, they ranged from Rs 35-50. The insurance premium constitutes the only payment required from the member household for the pharmaceutical products it receives from its health post, except for a nominal Rs 1 - 3 registration fee intended to discourage frivolous demand for health services. The average cost of drugs provided per patient visit during 1995 ranged from Rs 8.82 at Gotikhel health post to Rs 14.09 at Bhattedanda health post. The weighted average cost in the five participating health posts was Rs 11.53.

Thus, the premiums and registration fees cover the pharmaceutical costs of approximately three to five patient visits per household per year. Households from outside the health posts' target areas may purchase insurance from the scheme, but pay higher premiums, as determined by the HPC. In addition to the pharmaceutical benefits, insured households also receive a waiver of registration fees at Patan Hospital, as well as a Rs 30 discount on outpatient charges and a Rs 200 discount off inpatient charges. Over 90% of referrals from the participating health posts are completed, including feedback to the health posts! Access to the Patan Hospital may, in fact, be considered by some as the principal benefit of the Lalitpur Scheme, and thus may be a significant constraint on the replication of the insurance model.

Drugs for patients who are too poor to pay the premiums are purchased from a separate charity fund when the HPC grants authorization. The charity fund is financed by voluntary contributions made by well-to-do villagers. Emergency patients, who are uninsured or from outside the catchment area of the five health posts, receive needed drugs free of charge.

Drugs for tuberculosis treatment are distributed free of charge after payment of a Rs 100 deposit, which is refunded upon completion of the full course of treatment. The health post dispenses free-of-charge drugs provided by special government health programs. The following products are included in this category:

- Drugs for children under five years of age,
- Drugs for women attending antenatal clinics,
- Family planning supplies,
- EPI vaccines,
- Malaria and Kala-azar drugs,
- Leprosy drugs,
- Oral Rehydration Salts (ORS) and
- Mental health drugs

Except for mental health drugs, there are no data on the value of the products received by the health posts from these special programs (Thus, measures of the extent of cost-recovery under the scheme include only mental health drugs from the above list )

The responsibilities of the HPCs are to

- Establish rules and regulations, including the amount of the premiums,
- Supervise and support health post staff,
- Manage fee collection,
- Market the program and establish good public relations, and
- Identify exempt persons, including the genuinely poor

In 1994 and 1995, approximately 40.8% and 38.2%, respectively, of the households in the Lalitpur Scheme target area purchased insurance. A study conducted in 1993 found that the average insured household had 6.95 members<sup>23</sup>. Thus, it can be estimated that approximately 17,000 persons were covered by the scheme in 1995, when 38.2% of 6,419 target households purchased insurance<sup>24</sup>.

It is important to realize that the scheme's premiums are intended only for medicines, not for health services in general. Furthermore, they are not intended to cover the total cost of the medicines, but rather to complement the pharmaceutical grant of Rs 25,000 provided annually to each health post by UMN and, more recently, an MoH supplemental grant, which averaged Rs 14,566 during FY2051/2052. Health post staff use the revenues to purchase (at original cost) medicines stocked by the UMN through its Community Development and Health Project (CDHP). Staff may not use revenues for any purpose other than to purchase medicines, unless it is determined that there are more funds than are needed to fully meet the need for essential medicines. This requirement, in effect, reduces the discretionary authority that may be exercised by the HPC. The study determined, however, that all HPCs are active, and, in fact, the health posts' total revenues generally and substantially exceed their expenditures for medicines (see Table 4).

The Lalitpur Scheme attempts to supply only 27 of this study's 39 tracer drugs for the health post level. Of these 27 drugs, the survey identified 13 stockouts at the three Lalitpur Medical Insurance Scheme health posts in the sample. Thus, the availability of the 27 Lalitpur Scheme products was 84.0%, a very good result and a significant advance towards the scheme's primary objective. It should be further noted that the scheme achieved this level of availability with a lower total subsidy (Rs 43,309) than that received by MoH health posts (Rs 50,000). Furthermore, data provided by UMN indicate that the total value of pharmaceuticals received per health post was Rs 68,830.91 in FY 51/52. (When the lower unit costs UMN pays for its drugs are taken into consideration, the volume of medicines distributed at a Lalitpur Scheme health post rises to the equivalent of Rs 81,465, or 60% greater than that at an average health post in Nepal.)

The UMN directly manages an efficient supply system, which purchases and stocks the required pharmaceuticals in a project storeroom located at Patan Hospital. Health post personnel, who generally have relatively easy access to this location, purchase replacement stocks of drugs (at their original cost) from this store, as often as required, but normally on a monthly basis. This logistics service is a critical element in the scheme's successes in both maintaining drug availability and generating revenues. Its replication in more remote areas of the country, however, would be neither easy nor inexpensive.

Table 4 compares total revenues from insurance premiums, registration fees and bank interest to the value of the pharmaceuticals used at each of the health posts that participate in the Lalitpur Scheme.

Table 4

**Financial Data for the Lalitpur Medical Insurance Scheme  
Five Health Posts (FY 2051/2052)**

|   | DESCRIPTION                         | Bhattedanda | Asrang     | Chapagaon  | Chaugare   | Gotikhel   | TOTAL       | 5 HP Avg   |
|---|-------------------------------------|-------------|------------|------------|------------|------------|-------------|------------|
|   | <b>REVENUE (Nepali Rupees)</b>      |             |            |            |            |            |             |            |
| 1 | Insurance and Reg Fees              | 28,244 00   | 40,542 00  | 67 087 00  | 20 220 00  | 38 455 00  | 194 548 00  | 38 909 60  |
| 2 | Bank Interest                       | 3 508 00    | 5 588 00   | 10 518 00  | 7 772 00   | 3 213 00   | 30 599 00   | 6 119 80   |
| 3 | UMN Grant (subsidy)                 | 25 000 00   | 25,000 00  | 20 400 00  | 25 000 00  | 25,000 00  | 120 400 00  | 24 080 00  |
| 4 | MoH Indent (subsidy)                | 9 778 00    | 9,904 00   | 0 00       | 9 750 00   | 9 942 00   | 39,374 00   | 7 874 80   |
| 5 | Mental Drugs (subsidy)              | 6,503 98    | 6 888 41   | 31 141 82  | 5 793 51   | 6 441 40   | 56 769 12   | 11 353 82  |
|   | <b>TOTAL REVENUE (Rs)</b>           | 73,033 98   | 87,922 41  | 129 146 82 | 68,535 51  | 83 051 40  | 441,690 12  | 88,338 02  |
|   | <b>DRUG EXPENDITURES (Rs)</b>       | 67 072 55   | 64,947 80  | 93 219 74  | 54 957 12  | 63 957 34  | 344 154 55  | 68,830 91  |
|   | Patient Visits                      | 4 760       | 5 192      | 8,516      | 4 126      | 7 253      | 29 847      | 5 969 40   |
|   | <b>Drug Cost/Patient Visit (Rs)</b> | 14 09       | 12 51      | 10 95      | 13 32      | 8 82       |             | 11 53      |
|   | <b>COST RECOVERY RATES</b>          |             |            |            |            |            |             |            |
| 1 | Insur & Reg Rev /Drug Cost          | 42 1%       | 62 4%      | 72 0%      | 36 8%      | 60 1%      |             | 56 5%      |
| 2 | Rev less subsidies/Drug Cost        | 47 3%       | 71 0%      | 83 2%      | 50 9%      | 65 1%      |             | 65 4%      |
|   | <b>Gross Profit (Loss) (Rs)</b>     | 5,961 43    | 22 974 61  | 35,927 08  | 13 578 39  | 19 094 06  | 97,535 57   | 19,507 11  |
|   | Subsidy Increase (Decrease)         | (8,718 02)  | (8,207 59) | 1,541 82   | (9,456 49) | (8,616 60) | (33,456 88) | (6,691 38) |

Source Unpublished data provided by UMN

From this table it is clear that the general rate of cost-recovery is relatively good. It is sufficient to generate a profit for the health posts, if the various current subsidies are considered as revenues. Other data provided by UMN suggest that the rate of cost-recovery has been nearly constant over the past five years. The data also show that the growth in revenue and pharmaceutical consumption have been approximately equal to the increase in the consumer price index during the past five years.

In summary, the Lalitpur Medical Insurance Scheme appears to have achieved a high availability of the essential drugs that the CDHP identified as having priority. It currently supports approximately 60% greater pharmaceutical availability than that found in most health posts without drug schemes, and thus despite the fact that Lalitpur Scheme health posts receive a lower total annual subsidy. The MoH is committed to providing the normal subsidy to the scheme's posts in the future, which will permit both the gradual elimination of the CDHP subsidy as well as a modest "profit" for the discretionary use of the HPC. The scheme's posts have also achieved high levels of productivity, providing nearly three times the national average of approximately 2,800 consultations per year.<sup>25</sup> The Lalitpur Scheme appears to be actively supported by the population and the HPCs. In fact, a recent study found that 88% of the subscribers would be willing to pay higher premiums.<sup>26</sup>

The unit costs paid by UMN for essential drugs are very competitive. A weighted average of unit costs for 16 essential drugs paid by UMN is 20% less than that paid by the MoH Logistics Management Division, and is essentially equal to UNIPAC prices after correction for shipping and handling charges. Similarly for the same list, the weighted average of the lowest retail prices in Kathmandu, the cost that consumers would pay, if they consistently purchased the most economic product at the drug shop with the lowest price, is 85% higher than UMN's cost (see Annex 2).

### C The Britam Nepal Medical Trust

The BNMT began its work in improving the availability of essential drugs in 1969 with the inception of the Hill Drug Scheme in eight hill districts in eastern Nepal. This scheme is based on the realization that, when health posts deplete their annual supply of drugs from the MoH, patients must purchase what they need in the private sector. BNMT works with retailers located near health facilities. The retailers agree to sell only products provided by BNMT.

The Hill Drug Scheme is an innovative approach to the delivery of essential drugs through the private sector, but is relatively small, having supplied Rs 513,594.36 to 35 retail shops during 1993. Well over half of these drugs were delivered to two shops, one in Terathum Bazaar and the other in Diktel Bazaar. Of the remaining shops, 10 received no drugs during the year, while the remainder received an average of just over Rs 9,100 each. Assuming that the shops are open approximately 290 days per year, they may, on average, be seeing two persons each per day at an average prescription cost of Rs 16. Further analysis of this scheme was not undertaken through the current study.

In 1980, BNMT initiated the first Cost Sharing Drug Scheme in Bhojpur. Since then, it has implemented variants in Taplejung (1987), Panchtar (1989) and Khotang (1990) districts. The schemes include both health posts and the district's hospital, where there is one. The common objectives of both the Hill Drug Scheme and the Cost Sharing Drug Schemes are to

- 1 Improve the availability of essential drugs where needs are not being met,
- 2 Develop and support drug supply systems that are sustainable at the local, district and regional level, and
- 3 Promote the rational prescribing and consumer use of essential drugs according to principles of WHO's Action Programme on Essential Drugs<sup>27</sup>

BNMT sets the fees for the schemes, in consultation with the DHOs, and the money collected is deposited in a BNMT account for the purchase of replacement stocks. The Village Health Committees have little, if any, discretionary role in the financial management of the schemes. The following table presents the fees charged in the four districts, as well as the average prescription value reported for 1993.

**Table 5**  
**BNMT Drug Scheme Fees and 1993 Average Patient Drug Cost**

| District         | 1993                                     |                |               |        | 1994        |                  |
|------------------|--|----------------|---------------|--------|-------------|------------------|
|                  | Avg Pt Cost<br>in Rs (#<br>Products/Pt ) | Fee (Rs)       | Cost Recovery |        | Fee (Rs)    | Cost<br>Recovery |
|                  |  |                | Possible      | Actual |             | Possible         |
| <b>Bhojpur</b>   | 21 0 (2 0)                               | 5 or<br>2/item | 33 3%         | 22 5%  | 5 or 2/item | 33 3%            |
| <b>Taplejung</b> | 30 5 (2 5)                               | 5              | 16 4%         | 12 9%  | 3/item      | 19 6%            |
| <b>Panchtar</b>  | 23 4 (2 6)                               | 5              | 21 4%         | 20 8%  | 7           | 29 9%            |
| <b>Khotang</b>   | 15 1 (1 5)                               | 3 or<br>1/item | 19 9%         | 26 0%  | 5 or 2/item | 34 8%            |

Source: B Rajak, R Acharya and K. Holloway, *Annual Report 1993 BNMT*, June 1995. Note: In Bhojpur and Khotang there is a two-tier fee structure with one charge for expensive drugs and a lower charge for cheap drugs. To calculate the theoretical maximum rate of cost-recovery it was necessary to make an assumption concerning the relative frequency of expensive and cheap drugs. They were assumed to be prescribed with equal frequency. An inaccuracy in this assumption may have contributed to the logical impossibility in Khotang where the actual revenue exceeded the theoretical maximum.

The average per patient cost is based on the total value of drugs (from both HMG and BNMT) consumed at district health posts, divided by the number of patients seen. The cost of unused and damaged drugs is not included in the total value. The maximum possible rate of cost-recovery is calculated by dividing the fee by the average patient cost. In the cases of per item fees it is assumed that, on average, each patient receives an equal number of expensive and inexpensive items. It appears that UMN regularly collects close to the theoretical maximum of revenues, which suggests a relatively effective fee collection process.

The average drug cost per patient is generally twice that observed in the Lalitpur Scheme.

With respect to exemptions, "in order to encourage attendance of patients under five years of age and pregnant women, they are charged at only the cheap rate regardless of whether the items they receive are cheap or expensive. Likewise destitute patients are required to pay only a nominal amount for their treatment."<sup>28</sup> It appears that health facility personnel determine who is destitute.

The actual levels of cost-recovery are relatively low when compared to the Lalitpur Scheme. It should be emphasized, however, that the BNMT schemes had not set specific targets for higher rates of cost-recovery. If Lalitpur Scheme's per patient costs were as high as those in the BNMT schemes, the rates of cost-recovery would be about the same.

As in the case of the Lalitpur Scheme, the administrative and transportation costs of the supply system have not been included in the analysis. For 1993, BNMT has reported these costs to have been Rs 1,833,278, a sum 89.9% of the original costs of the BNMT drugs supplied. These costs appear relatively high. This is largely due to the remoteness of the participating facilities. It seems doubtful, however, that a sustainable national system could support similar costs.

On the other hand, data collected by this study indicate that somewhat more than 72% of the tracer drugs were available at BNMT health posts. This represents an improvement in excess of 25% over the level of availability at MoH health posts where no cost-recovery schemes have been implemented. The program accomplishes this with an increase in the subsidy of medicines at its health posts of approximately Rs 18,000 per year in addition to the normal MoH indent. While the costs of its supply system, as it is currently organized, appear unsustainable without external collaboration, health status is undoubtedly improved as a result of the enhanced supply of essential drugs. The challenge in this situation is to cut costs without sacrificing the significant public health achievements that BNMT has achieved.

In 1993, the BNMT health posts reported receiving an average of 3,059 patients each, or 10.4 per working day (294 days per year). This represents a substantial increase over the estimated national average of approximately 2,800 patients per health post per year. BNMT also reports that patient attendance increased in 1993, despite an upward revision of the fee structure.<sup>29</sup> Overall, outpatient attendance continues to be low, however, at approximately 1 visit per year for every five members of the estimated populations of the four districts. The BNMT experience, therefore, lends still more support to the hypothesis that Nepalis are willing to contribute to the cost of their health services, particularly if there is improved availability of essential drugs. In fact, the evidence suggests that when quality improves, consumption of services increases, despite the imposition of modest charges.

The present survey found that the VHCs associated with the surveyed health posts were relatively inactive compared to those surveyed where the WHO/HMG and Lalitpur Schemes were functioning. Possibly this has to do with the VHC's reduced role in financial management under the BNMT scheme.

The unit costs paid by BNMT for essential drugs are competitive. A weighted average of unit costs for 20 essential drugs paid by BNMT is just 2% more than that paid by LMD. BNMT pays, on average, approximately 55% more than the list price of UNIPAC, before the inclusion of shipping and handling charges. The weighted average of the lowest retail prices in Kathmandu, the cost that Kathmandu consumers would pay if they consistently purchased the most economic product at the drug shop with the lowest price, is 44% higher than BNMT's cost. It is possible that BNMT could achieve significant efficiencies in procurement, by coordinating selected purchases with UMN.

#### **D The World Health Organization**

Implementation of the WHO/HMG Community Drug Supply Scheme started in 1986. The initial endowment is perhaps the scheme's most unusual feature. The scheme provided a Rs 50,000 security bond to each of the first 12 participating health posts, the interest (13% annually) from which could be utilized for the purchase of the supplies of essential drugs. Later, the scheme eliminated the endowment and provided a Rs 25,000 grant in its place. The Rs 25,000 was deposited in a bank account. Up to 20% of the money could be used for administrative costs, while the remainder is intended for the purchase of supplies of essential medicines.

The endowment strategy is, in effect, a form of guaranteed subsidy. Once the security bond has been provided, the health post has Rs 6,500 per year in additional funds for the purchase of medicines. The strategy's weakness lies in its dependency on a stable currency. When the endowments began in 1986, MoH's annual health post indent for essential drugs was Rs 10,000, and the supplemental income from the security bond represented a 65% increase in funding. Ten years later, the MoH's annual health post indent has been increased to Rs 50,000, and the relative value of the endowment income has decreased to 13%.

Another interesting and very important feature of the Community Drug Supply Scheme has been the formal creation of a health post committee. The chairperson of the Village Development Committee is the exofficio chairperson of the health post committee. The health post in-charge is the exofficio member secretary of the committee. Other local leaders serve as members, who number between five and fifteen. The committee has the responsibility and corresponding authority for overall implementation, management and monitoring of the scheme and its financial resources. Of the seventeen health posts visited under the current study, all committees were considered "active," that is, they had met at least once in the preceding six months. By way of comparison, only three of the ten committees at the facilities with BNMT cost-sharing drug schemes had met within the preceding six months. The current study did not attempt to determine why the health post committees at sites with the Community Drug Supply Scheme were active, but it is worth noting that they have real financial responsibility and discretionary decision making authority, while the committees at BNMT facilities do not.

Fees at WHO/HMG scheme sites take the form of a Rs 2 registration fee. When the scheme started, and including the endowment income of Rs 6,500, having 1,750 patients per year who pay the registration fee would have been sufficient to double the funds available for essential drugs. In other words, six patients per day were sufficient to double the funds available for essential drugs. Currently, ten years later, the registration is still Rs 2 per patient. Now the number of fee-paying patients required per year to double the funds available for essential drugs has increased to 21,750 or approximately 75 per day. Although the average value of medicines prescribed per patient is not known for the WHO/HMG scheme nor for MoH facilities without schemes, it is probably far greater than Rs 12, which is the average value of medicines prescribed at facilities participating in the Lalitpur Medical Insurance Scheme. Even if the registration fee were Rs 12, the theoretical maximum rate of cost-recovery would be 16.7%.

In fact, however, the income reported by facilities that participate in the WHO/HMG scheme is considerable higher. Rs 14,904 on average, of which Rs 5,058 was spent on drugs. Most of the remainder appears to be deposited in bank accounts. The balances in these accounts now average nearly Rs 70,000 and have been increasing at an average rate of Rs 8,000 per year for the past three years. The actual cost-recovery rate is estimated to be 27.1%, suggesting that the facilities may be collecting other revenues or that many fee-paying patients do not receive all the drugs that are prescribed.

The fact that only Rs 5,058, just under 34% of total revenues, is spent on replacement drugs would suggest that the participating facilities do not perceive drug shortages. The survey conducted for this study, however, did find significant shortages of essential drugs. In fact, the survey found somewhat fewer essential drugs at WHO/HMG sites than at MoH facilities without drug cost-sharing schemes. Why don't the health post committees use more of their income and/or their cash bank balances to resolve some of the drug shortage problems?

The WHO/HMG scheme does not have an effective or efficient supply mechanism. Health post committees are expected to purchase required replacement stocks of essential drugs from any convenient wholesale or retail outlet. The study found, however, that wholesalers and retailers, generally do not carry the full range of tracer drugs. Thus, one may presume that, in order to purchase a range of products, health post committees or their designated representatives must, at minimum, visit several private sector sources before finding all (or even most) of the essential drugs that they require.

Similarly, and as previously mentioned, in the private sector, even in Kathmandu Valley, where price controls are probably better observed than in other areas, the prices of essential drugs in retail shops, when they are available, are substantially higher than those obtained by either the MoH Logistics Management Division or the UNM and BNMT drug schemes. The lowest retail prices for a package of 16 tracer drugs priced at Kathmandu retail outlets averaged 47% more than the average unit prices paid by LMD for generically equivalent products. Furthermore, in areas where price controls are not well enforced and where substantial transport costs are incurred, most health posts that are participating in the WHO/HMG scheme probably pay higher unit costs than the lowest unit costs found at retail outlets in Kathmandu Valley.

In summary, although health facilities participating the WHO/HMG community drug supply scheme collect considerable revenue, they apparently achieve very little in terms of insuring availability of drugs. The lack of any designated mechanism(s) through which participating facilities may purchase replacement stocks appears to be a crucial missing element in the scheme. This problem is made worse by the limited ranges of essential drugs that may be located at individual commercial wholesale and retail outlets. Although this model would be relatively easy to replicate, there would be little point in doing so unless the problem of the missing supply link were solved. One possible approach to resolving this issue is presented in Section VII of this report.

#### **E Summary Comparison of Three Drug Cost-Sharing Schemes**

The following table attempts to summarize and compare the most important aspects of each of the three drug cost-sharing schemes that have been discussed.

**TABLE 6**  
**Comparative Performance of Three Drug Schemes**

| Indicator                                 | BNMT Cost Sharing | UMN Lalitpur Insurance | WHO/HMG Community |
|---|-------------------|------------------------|-------------------|
| Availability (MoH = 60%) <sup>a</sup>     | 72.4%             | 84.0%                  | 57.2%             |
| Subsidy Increase (Rs) <sup>b</sup>        | 17,978            | -6,691                 | 0                 |
| HP Drug Stock Increase <sup>c</sup>       | 76.3%             | 65.3%                  | 6.9%              |
| HP Utilization Increase <sup>d</sup>      | 53.5%             | 198.5%                 | No Data           |
| Avg Drug Cost/Patient (Rs)                | 26                | 12                     | No Data           |
| Relative Unit Purchase Costs <sup>e</sup> | 101.9%            | 78.2%                  | 144.3%            |
| % of Drug Costs Recovered <sup>f</sup>    | 18.7%             | 56.5%                  | 27.1%             |
| Village Committee Authority               | Limited           | Extensive              | Extensive         |
| Administrative Overhead                   | High              | High                   | Nil               |
| Replication Feasibility <sup>g</sup>      | Limited           | Limited                | High              |

Source: Survey data collected for this study plus both published reports and unpublished data was provided by BNMT, UMN and WHO

*a* This measure refers to physical presence in health facilities at the time of the survey of products from a list of 39 tracer drugs

*b* Over (under) the standard indent of Rs 50,000/HP/year from the MoH. This figure represents that portion of the purchase cost of additional drugs that was financed by the NGO. Administrative costs are not included.

*c* The volume of increase are estimated by adjusting the amounts actually spent. The adjustment takes into account variations in unit costs. They show the value of drugs that could have been provided had all three schemes purchased drugs at LMD unit costs. In the cases of UMN and BNMT the basis of calculation is their actual unit costs. In the case of the WHO/HMG scheme the basis for calculation is the average unit cost for the lowest priced generically equivalent products found in retail outlets in Kathmandu Valley.

*d* Compared to an estimated national average of 2,000 patient consultations per year per health post. Many factors in addition to the presence of drugs may influence the utilization of health posts, but international experience indicates that availability of drugs is strongly correlated with facility utilization.

*e* For UMN and BNMT the percent given is the relative cost compared to LMD acquisition costs. In the case of the WHO/HMG Community Drug Supply Scheme the percent given is the relative cost of the least expensive generically equivalent in Kathmandu Valley retail drug shops. Actual unit costs paid by facilities participating in this scheme are probably much higher.

*f* The percentage of drug costs recovered is the estimated revenue divided by the estimated drug acquisition cost.

*g* Replication feasibility provides the summary subjective opinion of RPM. To be effective, efficient and feasible on a large coverage basis, all schemes would require some modification. For example, the BNMT model correctly identifies the need for a supply mechanism that achieves economies of scale in the acquisition process, but probably should assign responsibility for district to facility distribution to the participating facilities and their health committees. Similarly, the Lalitpur Medical Insurance model achieves a great deal, but its success also depends on an effective, directly managed supply process, which would be difficult to widely replicate without modifications. Its success may also depend somewhat on the provision of access to quality hospital services, another feature that will be difficult to widely replicate. The WHO/HMG scheme, on the other hand, could be easily replicated, but it has so far brought little public health benefit.

In Table 6, shading has been added to those cells where the best performance is noted. The point here is to note that no alternative has the unique answer to all situations. Each model excels in some area and under certain conditions. Although more frequently cited as having the best score for a specific indicator, UMN's health posts are not nearly so numerous nor as geographically remote as those supported by BNMT. The discussion here has tended to understate this difference in the two schemes, but it must be taken into account for usefully interpreting these results. The WHO/HMG scheme, while it could be easily replicated, accomplishes very little in terms of public health benefit.

Several very general conclusions seem possible:

- 1 All three of these schemes have significant achievements and strengths
- 2 Each scheme could benefit from some aspects of the experience of the others
- 3 As a corollary, despite 20 years of effort, no scheme has all the answers to all the different circumstances in Nepal
- 4 It seems possible to conclude that no single scheme is likely to work well throughout the Kingdom

The next chapter attempts to outline some criteria and strategies which, if followed, should increase the probability of successful extension of drug cost-sharing throughout Nepal in an acceptable time frame.

VII CRITERIA FOR SUCCESS — CONCLUSIONS AND RECOMMENDATIONS

Nepal has made impressive progress in the development and implementation of drug cost-sharing mechanisms Personal expenditures in the private sector for pharmaceutical products clearly demonstrate the population's general willingness to pay for health services when the quality of services is appreciated There appears to be ample scope for increasing levels of cost-recovery for pharmaceutical products in the public sector Currently, as summarized in Table 7, pharmaceutical-related revenues in the public sector account for less than 0.2% of estimated private expenditure on pharmaceuticals!

TABLE 7

Summary of Pharmaceutical Funding Sources

| Sources  | Rupees (millions) | % of Total  |
|--|-------------------|-------------|
| 1 Personal Expenditures in Private Sector (est )                   | 3,084             | 92.0%       |
| 2 MoH-National Treasury (1994) <sup>a</sup>                        | 52                | 1.6%        |
| 3 MoH-Donor Support (1994) <sup>a</sup>                            | 216               | 6.4%        |
| 4 Personal Expenditures in Public Sector Cost Sharing <sup>b</sup> | 2                 | ≤1.0%       |
| 5 NGO Importations <sup>c</sup>                                    | No Data           | No Data     |
| <b>TOTAL</b>   | <b>3,352</b>      | <b>100%</b> |

Source: Developed from a number of sources including Department of Drug Administration, *Quantification of Drug Requirement in Nepal: A Consumption Survey*, Ministry of Health, 1992; V. Dias, *Nepal Ministry of Health Pharmaceutical Supply Directory*, RPM Project, June 1995, and survey data collected from this study.

- a To make figures comparable, the 1994 US\$ amounts were converted at Rs 50 = 1\$US
- b Not included in the total since these are drugs purchased by HMG. The UMN and BNMT drug schemes are not shown. Their total revenues, including the sale of MoH-provided drugs, are approximately Rs 1,000,000.
- c It is possible that some NGO importations are not included in customs figures on which the Department of Drug Administration derived estimate for personal expenditure in the private sector is based.

Based on both international and Nepali experience, a number of guiding principles should be followed to ensure future success of drug cost-sharing initiatives. These guiding principles are presented below in the form of general recommendations. If these principles are followed, the drug cost-sharing initiatives should achieve high levels of performance on the indicators presented in Section F below.

A Ensure Community Involvement and Control

If there is a single important emerging principle concerning social and economic development, it is the need for local and community involvement and control wherever feasible. Failure to take this principle into account has limited the impact of countless donor-assisted development efforts. Recently, the World Bank reviewed cost-sharing experiences in sub-Saharan Africa and concluded that community control of user fee revenue not only supports development processes, but also leads to more equitable service delivery systems.

User fees also foster equity when some portion is retained at the point of collection, especially at local facilities by allowing fees to be retained at the point of collection, the central government can partially shift control over budgetary matters and expenditures to districts<sup>30</sup>

The WHO/HMG drug financing scheme permits retention of revenues by the community and assigns responsibility for their management to a village health committee. The UMN scheme assigns significant authority and responsibility for revenue management to local personnel, while there appears to be little discretionary authority under the BNMT scheme. While conserving the principle of local discretionary authority, local managers under the WHO/HMG scheme should receive additional training on the options and ways to use the funds under their control. Although shortages of essential drugs persist under all schemes, other problems, such as the high frequency of personnel transfers and the lack of incentives to motivate performance, may be just as, or even more, damaging than the absence of drugs. VHC use of revenues to provide performance incentives and rewards to health personnel should be accepted as an option.

It seems reasonable to restrict drug cost-sharing revenues to expenditures directly related to the delivery of health services. Within those limits the VHC should have discretionary authority and be held accountable by its constituency, the members of the community. MoH supervisory personnel should provide technical assistance to the VHC.

Another area in which international experience suggests that local authorities have predominant capability is in determining which community members cannot pay the drug cost-sharing fees. To ensure transparency at the local level, however, VHCs should adopt their own policy with respect to exemptions from payment, which should be understood by community members. The MoH could develop a brief manual of suggested options, together with their respective advantages and disadvantages. This issue should be covered in VHC training and in follow-up supervision. It should be noted, however, that both international and Nepali experience suggest that the vast majority of the population has the capacity and willingness to pay for most essential drugs, and that the more patients are exempt from payment, the harder it will be to meet specified cost-recovery targets.

## **B Analyze and Use the Incentives that Motivate Client Behavior**

There are two complementary considerations of client behavior that cost-sharing initiatives must consider, if they are to succeed. First, clients will pay only for services and products that they value. Second, they will purchase those services and products from the source that provides them for the least total cost, including access costs to the client.

Under the first consideration, a client at an MoH health facility may accept tablets and capsules from bulk containers when those products are distributed free of charge, but they may object to paying for the same products, if they are accustomed to receiving them in commercial packaging at retail pharmacies. When marketing products, it is not the intrinsic quality of the product that determines whether sales are made, rather, it is the perception of quality. Drug cost-sharing schemes must be perceived as providing quality products and service.

In insurance schemes, clients will consider the provider's ability to reliably deliver products when they are needed. If that reliability is present, they may accept some lessening in the perception of quality in the product itself, for example, bulk packaged products, since the product is in fact "free" of cost at the time it is dispensed. But when clients are making payments at point of dispensing, they will be more conscious of apparent quality.

Progress made to-date could be jeopardized if efforts to proceed do not adequately take into account the influence charges may have on health-seeking behavior. The following example illustrates how charges for pharmaceutical products may produce unwanted results, if they are not incorporated into a comprehensive cost-sharing strategy.

*Example 1*

Current CDP plans are to establish pharmaceutical cost-sharing mechanisms at all facilities below the level of hospital. Cost-sharing may or may not be introduced at the hospital level.

In areas where geographic access is a relatively minor issue, for example in Kathmandu Valley and the Terai, will charges for pharmaceuticals at the primary care level encourage the population to bypass that level and overuse the hospital level?

The following example illustrates how creative approaches to charging for pharmaceutical products might reduce waste and improve effectiveness.

*Example 2*

Current policy is to provide TB drugs free of charge, believing that charges would discourage compliance with the extended treatment regimen. At the same time, in order to increase compliance, expensive drugs with shorter treatment regimens are used.

For TB drugs, would charges, in the form of a deposit, that would be refunded after successful completion of the full course of treatment result in greater overall compliance? The deposit system has been used by the UMN, in an attempt to reduce dropout rates.

It will be very important to thoroughly test drug cost-sharing strategies in the field. Clients will not always respond in the way government planners and their international advisors anticipate.

**C - Encourage Diversity in Drug Cost-Sharing Initiatives**

Nepal is a diverse country. There are topographical extremes that dramatically affect the modes and costs of the transportation of pharmaceutical products and, therefore, the most cost-effective supply interval. There are climatic extremes that limit the shelf life of certain products, particularly in the Terai, where optimal supply intervals might be relatively short. There are epidemiological variations that affect the demand for certain products and certain types of services. There are economic variations that affect the feasibility of development of insurance and managed care options. There are educational and language variations that affect the need for, and feasibility of, patient education on appropriate use of pharmaceutical products, as well as the ability to adequately manage drug cost-sharing initiatives. Finally, there are ethnic and cultural variations that affect the demand for certain products, such as modern contraceptives, and which may affect the way VHCs are organized and function.

In brief, just as drug cost-sharing models developed in other countries and/or continents cannot be imported to Nepal, no single drug cost-sharing model is likely to be optimal for all communities within Nepal. The ideal solution for Nepal would seem to be to encourage the further development of existing programs, both in their effectiveness of service provision (drug availability) and revenue generation, as well as in terms of their coverage. Nepal should not acquiesce to demands for over-simplified standard approaches to complex problems, just because such approaches are easier to present and justify to funding agencies. NGOs could be encouraged to participate and share their experiences, perhaps at annual conferences organized under HMG's leadership.

In effect, the determination of how different groups of drug cost-sharing clients behave will be accelerated, if the several existing models are extended and monitored against specific performance criteria as described in Section F.

#### **D Simplify Management Systems to the Bare Essentials**

Effective management systems focus on critical minimum needs for decision making. Sophisticated information systems serve no purpose, if they do not produce information that managers can use to solve pressing problems. Ministries and donor agencies are vast storehouses of unused information. Drug cost-sharing planners should require only minimal routine reporting. If district-level supervisors report quarterly on the minimal set of performance indicators described in Section F, central level authorities will have sufficient information on which to base routine management decisions.

In the case of drug cost-sharing initiatives, current levels of cost-recovery are so low and the acquisition price of essential generic products is so low relative to the brand name equivalents most commonly sold in private sector drug shops, that considerable flexibility is feasible in the pricing strategies for drug cost-sharing. Where accounting and record keeping skills are readily available, for example, in Kathmandu Valley, charges to each patient may be based on the cost of the drugs they receive. Where such skills are scarce, more simple methods such as flat fees will be more appropriate. As discussed in Section F, however, each drug cost-sharing site should have specific quantitative targets for a general set of performance criteria which permit evaluation of the site's pricing policies.

Regular supervision is essential and should include a quantitative checklist composed of a limited number of objectively verifiable performance indicators. VHCs should demand and reward routine supervision.

#### **E Simplify and Diversify the Supply Process**

The cost of supply is critical to the feasibility and eventual success of drug cost-sharing. It would be an error, however, to assume that one system can be operated at uniform costs throughout the country. Among other things, transportation costs vary widely. The availability of skilled managers also varies.

In Kathmandu and the larger cities in the Terai, drug cost-sharing managers should encounter relatively little difficulty in obtaining supplies at reasonable prices. In most hill and mountain districts, however, some form of intervention may be necessary to guarantee that supplies are locally available to drug cost-sharing site managers. Several possible strategies could be considered.

*Strategy 1 Laissez Faire*

This strategy relies on the private sector to respond to emerging demand from drug cost-sharing site managers. The disadvantage to this strategy is that, to-date, the private sector has not performed well. Shopkeepers in the vicinity of health facilities had barely 50% of the tracer products in stock at the time of the survey. Furthermore, the prices of those products that are available are relatively high. The current system of price controls, which may be difficult to change, appears to discriminate in favor of expensive products.

This strategy of buying whatever is available in the private sector at prevailing prices is essentially what the WHO/HMG cost-sharing scheme is doing now. Its principal advantage is that it requires no specific intervention by HMG.

*Strategy 2 Guaranteed Uniform Price*

Under this strategy, a collaborating NGO would contract with a national supplier who, for a specific district (or set of districts), would agree to maintain adequate stocks of essential generic pharmaceutical products in the district's headquarters at a specified unit price. The unit price could be based on the MoH's latest acquisition price plus a substantial additional percentage. The supplier offering to meet specified performance criteria at the lowest cost would be awarded the contract and would become the preferred drug cost-sharing supplier for a district or group of districts. Examples of performance criteria include (1) guaranteeing availability of a specified range of essential drugs, (2) agreeing upon wholesale prices, and (3) agreeing upon a number of locations, usually district headquarters.

Although this strategy should result in greatly improved pharmaceutical availability, it depends upon the collaborating NGO's contracting capacity, including the capacity to monitor and enforce contract performance. There are probably NGOs that have this capacity. The costs of this service would be borne by international funding agencies until such time as revenues are sufficient to make a significant contribution towards operating costs.

One advantage of this strategy is that all drug cost-sharing initiatives would pay the same wholesale price, ensuring some degree of equity at the national level. While prices would be the same everywhere, contracts for remote districts would be more expensive. The additional expense constitutes an explicit subsidy for those districts.

***Strategy 3 Contract for Wholesale Distribution Services***

Under this alternative the MoH (or collaborating NGO) would contract for distribution services, but initial procurement would remain with HMG, with support from international donors. The contractors would (1) purchase the pharmaceuticals at specified MoH central and regional warehouses, (2) continuously maintain adequate stocks in the district headquarters specified in the contract and (3) sell the products at a contract-specified markup to drug cost-sharing managers. Failure to meet estimated maximum drug cost-sharing demand would constitute a breach of contract and subject the contractor to the loss of his or her performance bond, assuming that the failure did not result from a lack of availability of the product(s) at the MoH warehouse.

This alternative has the advantage of ensuring minimum initial acquisition costs, taking advantage of HMG's successful performance record in this area, which reflect the substantial economies of scale available with national procurement schemes.

This strategy has, however, the major weakness of depending on effective functioning of MoH management systems for (1) procuring and maintaining adequate stocks at central and regional warehouses, and (2) supervising and enforcing contractor performance. There is reason for concern about whether the MoH could fulfill these responsibilities effectively enough to ensure the required flows of drugs and revenues.

With a flexible approach, the strategies summarized here are not mutually exclusive, except that strategies 2 and 3 can not logically be adopted in the same districts. For individual drug cost-sharing sites, Strategy 1 always exists as a costly and not very effective fall-back in case the primary strategy fails.

At the national level, decision makers in charge of drug cost-sharing activities may wish to experiment with, and evaluate, all three strategies during the next phases of implementation.

All three strategies are based on the "pull" concept in logistics systems. Pull systems simplify the supply system by separating the administrative processes of meeting actual demand for pharmaceuticals from the technical processes involved with rational use and the theoretical demand calculated on the basis of epidemiological patterns and standard treatment norms. Inventory management can then be based on simple maximum and minimum stock levels at all points in the supply system.

**F      *Develop and Apply a Minimum Set of Drug Cost-Sharing Objectives and Indicators***

While diversity should be encouraged, there are certain minimum objectives that all program models should share and about which it should be fairly easy to reach agreement. In keeping with the need to minimize paper work and data collection, there should probably be no more than ten common performance indicators. The following list is illustrative, but may serve as a basis for initial discussion.

TABLE 8

Possible Common Drug Cost-sharing Objectives  
and Performance Indicators

| No | Objective      | Quantifiable Performance Indicators                        | Measure |
|----|----------------|--|---------|
| 1  | Effectiveness  | Tracer drugs in stock on day of supervision                | %       |
| 2  | Effectiveness  | Revenue collected relative to value of drugs consumed      | %       |
| 3  | Service Impact | Annual increase in consultations                           | %       |
| 4  | Equity         | Patients who do not receive prescribed and available drugs | %       |
| 5  | Management     | Quarterly supervisory reports completed during 12 months   | %       |
| 6  | VHC authority  | Existence of external limits on health uses of revenue     | Yes/No  |
| 7  | Efficiency     | Unit drug acquisition cost relative to HMG averages        | %       |
| 8  | Efficiency     | Value of drugs spoiled or expired relative to consumption  | %       |
| 9  | Rational use   | Patients treated with antibiotics                          | %       |
| 10 | Sustainability | Program's administrative costs relative to drug costs      | %       |

Source Developed by study investigators

It should be clear to all involved, including VHC members, health facility staff, DHO supervisory staff, and collaborating NGO staff, that the selected performance indicators constitute the criteria by which their work will ultimately be evaluated

The DHO will require a method for the consolidation of the data on individual indicators at individual sites. Such a method may involve weighting the individual performance criteria in order to develop a composite indicator of overall performance at individual drug cost-sharing sites. This composite indicator would probably weight heavily the first indicator presence of tracer drugs. The composite indicator will aid in the establishment of DHO supervision and support priorities. It will also allow the DHO to monitor changes in drug cost-sharing site performance over time and/or after specific interventions.

The standard set of performance indicators will permit the MoH to ensure that drug cost-sharing implementation, as a whole, follows MoH national policy and priority objectives, yet the focus on end results will permit the operational flexibility necessary for drug cost-sharing initiatives to adapt to local circumstances. To monitor progress, MoH drug cost-sharing personnel will require regular (quarterly) reports from the DHO on the district's average score for each indicator and, perhaps, the composite score for each drug cost-sharing site. They will also require data on a few district-level objectives, for example, the percent of health facilities with drug cost-sharing, the number of VHCs that have received training, etc. This data will permit the MoH to monitor progress in drug cost-sharing implementation and make valid comparisons among drug cost-sharing models that have operational differences.

Successful implementation of performance indicators as described above would facilitate the identification of both schemes and sites with superior performance. These schemes and sites might receive recognition and other incentives to motivate continued superior performance.

### **G Promote Partnerships with Local Resources and Institutions**

Within the context of the ambitious infrastructure expansion currently underway, the MoH should take advantage of all available local resources and institutions. The three drug cost-sharing schemes examined by this study represent a most significant resource. Each is currently generating significant amounts of revenue, nearly Rs 2,000,000 annually in the case of the WHO/HMG scheme.

It seems likely that funding agencies like KfW and Nippon Foundation would agree that some of the resources they have provided to HMG for drug cost-sharing be channeled to local organizations, as long as there is formal agreement between HMG and such organizations as to the general objectives of drug cost-sharing and the indicators by which progress is to be evaluated.

In summary, if this suggestion is accepted, the MoH would retain control over policy through the definition of objectives and performance-based evaluation criteria, but would delegate much of the field work to NGOs, or other institutions collaborating with individual DHOs. As necessary, the MoH could focus its own limited resources on any districts where collaborating institutions are lacking. Actually, the oversight of activities in 75 districts would appear to be a daunting challenge, even if collaborating institutions are identified in all districts. Furthermore, if maximum use is made of organizations currently operating drug cost-sharing schemes, it might be possible to have significant expansion efforts in more than six districts in a relatively short time, that is, less than one year.

### **H Adopt Realistic Implementation Targets**

Current complaints by drug cost-sharing's principal funding agencies, KfW and Nippon Foundation, appear to originate in perceptions that implementation of drug cost-sharing activities has been significantly delayed. In fact, it is clear that originally proposed targets have not been met. It is ironic that the current Community Drug Programme proposal does not seek to build on the existing base of over 200 drug cost-sharing sites already established by local organizations. With its plans to create and implement an entirely new scheme, the CDP proposal is, in effect, maximizing the amount of work to be done.

The result of the current approach has been a very high risk strategy in terms of relations with the funding agencies. What KfW and the Nippon Foundation presumably want are reports that drug cost-sharing sites are operating. What they have received so far are design documents. These two agencies, however, do not appear to be insistent upon any particular model of drug cost-sharing. They would probably be satisfied with, and would support the extension of existing models to new facilities and/or districts. Furthermore, in their role as grant recipients and/or contractors, the NGOs, always interested in satisfying their clients in the hopes of acquiring additional grants, would do everything reasonably possible to achieve specified targets. For the same reason, they would also be reluctant to agree to targets that seem unrealistic based on their field experience. This fact would be of practical assistance to HMG in its negotiations with the funding agencies.

## I Maintain Leadership for Drug Cost-Sharing in the MoH

Documentation suggests that, in the field, the Ministry of Local Development (MLD) is collaborating effectively in support of drug cost-sharing activities.<sup>31</sup> It is also clear that MLD has an important role to play in the strengthening of VHCs as an instrument of local governance for further development of democratic processes in Nepal. MLD is to be commended for its support.

The fundamental objective of drug cost-sharing, however, is the improvement of pharmaceutical availability. This objective is critical to MoH attempts to improve the quality and coverage of priority PHC services, the central objective of the whole health system. As such, drug cost-sharing is inherently a health project, which should be directed by the MoH, although with collaboration and support from other ministries, and from the Ministry of Local Development, in particular.

## J Investigate Gaps in Our Knowledge

In the course of carrying out this study, the investigators have inevitably come across certain gaps in our knowledge that should be filled as plans for drug cost-sharing go forward. The most important of these information needs are listed below.

- 1 ***Inventory of existing drug schemes*** Dr. Kafle's 1992 *In-depth Study of Existing Drug Schemes in Nepal* identified twelve different organizations (NGOs and donors) operating a total of 197 cost-sharing sites. Presumably some of these are no longer operating, while new ones have started. It would be useful to have an up-to-date inventory that describes all operating schemes, small and large.
- 2 ***Inventory of manufacturers and distributors*** If the recommendations of this study are adopted, private sector manufacturers and distributors would play a major role in future MoH-sponsored drug cost-sharing activities. The HMG Department of Drug Administration (DDA) has computerized listings of all licensed manufacturers, importers and distributors, as well as the products that each organization is licensed to handle. Using this database as a point of departure, it would be useful to identify the companies that already deal in the greatest numbers of products on the MoH essential drugs list. Clearly Royal Drugs Ltd. is a leader. Drawing on DDA's expertise and experience concerning drug quality control, it would also be useful to identify the companies that are presumed to be the best candidates for contract suppliers to cost-sharing programs. The next step would be to meet informally with some of these groups and exchange ideas on how such contracts could work. Following this, it would be possible to make formal proposals based on the strategies recommended in this study.
- 3 ***Study of private practice by health workers*** It appears that there are private drug shops near most public health facilities and that these shops are frequently owned by health facility personnel. The establishment of drug cost-recovery initiatives and their optimal performance may, therefore, affect existing financial interests of some of the very personnel who would be expected to support those initiatives. The degree to which this type of conflict of interest could impede implementation needs to be investigated. It might be feasible to mitigate such a problem, however, if VHCs used cost-sharing revenues to reward performance of certain health facility staff.

## VIII NEXT STEPS

In considering next steps, this study and international experience suggest several general principles that should be followed. These are briefly summarized below:

- 1 Given the underlying public health objective, the Ministry of Health should retain technical leadership of cost-sharing initiatives in terms of overall policy and objectives
- 2 As a corollary to the above, and given the current overextension of MoH's operating capacity, the MoH should not be requested to assume non-essential operating responsibilities that do not directly involve oversight of its overall policy and objectives
- 3 Drug cost-sharing initiatives should build on existing experience. Existing models should be adjusted, expanded and/or adapted to new conditions
- 4 Maximum possible advantage should be taken of existing human and institutional resources that have experience developing and implementing cost-sharing schemes
- 5 Maximum possible advantage should be taken of existing capacity in the private sector to perform certain functions in a supply system that ensures that health facilities have reasonable access to supplies of essential drugs at appropriate prices
- 6 Drug cost-sharing initiatives should be based on community management and control

With the foregoing in mind, the following strategic suggestions are made for the consideration of the MoH and its collaborating agencies. It should be reemphasized at this point that the authors of this study do not claim credit for the conceptualization of these suggestions. Rather, they derive from existing experience and the many conversations that the investigators had with professionals and managers of elements of the current public and private sector drug distribution systems.

- 1 **All drug cost-sharing schemes established in the future should ensure community (VDC) ownership of the program, including discretionary authority over the use of the revenues. Where necessary, existing schemes should be modified in a manner consistent with this suggestion.**

International and Nepali experience have both proven the importance of active community participation. The apparent success of the WHO/HMG model in collecting and depositing revenues in local bank accounts, the average balances of which are now approaching Rs 70,000, is quite astounding (Forty-four percent of these balances, or a little more than Rs 30,000 per health post, derive from savings achieved during the last three years). Similar results achieved by the Lalitpur Medical Insurance Scheme are also associated with significant financial authority delegated to the Health Post Committee.

Local MoH authorities, however, appear to be greatly overextended and under-supported. The District Health Offices (DHOs) do not have enough staff to adequately perform their supervisory functions. They are also under-funded, making field work personally costly, as well as physically challenging. Drug cost-sharing initiatives should coordinate closely with the DHO, but program designs should attempt to minimize any additional burden on that office.

- 2 **Within MoH-policy guidelines and objectives, experienced NGOs should be funded to provide the support (technical, managerial, and supervisory) required to establish additional drug cost-sharing sites and, possibly, to support the establishment of the suggested supply system to be operated by private sector organizations**

It is recommended that the MoH, with UNICEF support, negotiate grant agreements with NGOs to assume the responsibility of establishing community drug cost-sharing in specific districts or parts of districts. The MoH, UNICEF and the collaborating funding agencies should agree upon specific general characteristics and objectives that each participating drug outlet should achieve. Within these general characteristics, interested NGOs would present both technical proposals and funding requirements to the MoH, which would evaluate the proposals and negotiate agreements.

Regular reporting on the establishment of drug cost-sharing sites and on progress towards the achievement of the quantitative targets of performance indicators would be a part of each agreement. Included among the requirements of each grantee would be targets for achieving a high degree of village health committee oversight of its health post or sub health post, as well as collaboration with, and support for, the responsible DHO.

- 3 **Each drug cost-sharing site should have access to a supply point, eventually to be operated by the private sector, that reliably stocks all required essential drugs and sells them to drug cost-sharing sites at unit prices that reflect the significant economies that can be obtained through large purchases**

A reasonable compromise with the topographic and economic realities of Nepal would be a supply source, "district essential drugs store," located in the headquarters of each district that would sell the required drugs to the program's distribution points. It is recommended that each store stock the complete range of products required by the distribution points participating in the program. Sales records maintained at the district store would provide the data required to monitor the flow of products and revenues, without the need for trying to collect and consolidate data from several independent suppliers or many different scheme sites. Village health committees or health facility personnel would determine the quantity of each essential drug that they require, purchase it at the district store and transport it back to the health facility. It would be a "pull" system in logistics terminology, providing products only on demand. Such systems are familiar to everyone since every tea shop in the Kingdom uses a similar system.

The private sector clearly has the capacity to provide the required service. It is suggested that, with technical support from UNICEF and, perhaps, from the funding agencies, and using a tendering process, the MoH should contract with an agent to establish the district store for each district in which a substantial number of drug cost-sharing sites is being established. An agent, such as Sajha, could probably operate district stores in more than one district, but for the country as a whole there should probably be more than one agent, each serving a cluster of districts. The contracted agents should purchase their supplies at pre-negotiated prices from wholesale suppliers including (1) manufacturers like Royal Drugs, Ltd, (2) importers and wholesalers, and (3) the LMD and regional warehouses in the case of drugs purchased directly by the MoH from international sources such as UNIPAC. Through its normal tendering process, the MoH should negotiate unit prices with local manufacturers, importers and wholesalers that would be fixed for stipulated periods of time and would be paid by the contracted operators of the district stores.

The district stores would charge a limited negotiated markup when they sell products to the drug cost-sharing units. The prices charged could be the same throughout the Kingdom. The markup should not, however, be sufficient to cover all costs of district store operation. District store operators should receive additional periodic payments directly from the MoH, upon determination that the performance criteria stipulated in their contracts have been fulfilled. The amount of these payments would be the variable cost factor in the operator's tender offer and should constitute a performance incentive.

In effect, the UMN operates a system similar to the one described above for the five medical insurance scheme health posts in Lalitpur District. The principal differences of the UMN system are that it operates its own "district store," rather than contracting an agent in the private sector to provide this service, and it provides transportation for those products requisitioned (purchased) in the regular monthly request, rather than placing responsibility for store-to-facility transportation on the facility or the health post committee.

To implement these strategies, the MoH's contract and grant administration capacity should have access to technical and managerial support from UNICEF or the funding agencies. The MoH has demonstrated the capacity to contract for the purchase of drugs, although there have been significant delays. It would not be much more difficult to contract for the above described distribution services and to award and administer grants to NGOs. It is recommended, however, that the initial number of grants to NGOs not exceed four or five. In addition, the possibility that the NGOs be responsible for the initial contracts for supply services should be considered.

It has been suggested that there may be no qualified NGOs in certain districts. This may currently be the case, but this study recommends that drug cost-sharing be initiated where the greatest quantity of experience exists. At least one-third of the districts in Nepal have already had some experience with drug cost-sharing initiatives. It seems probable that extensions of the current spheres of influence of active NGOs would reach at least two-thirds, including the most populous, of Nepal's districts. Once these districts have satisfactorily functioning drug cost-sharing programs, it should not be difficult to identify NGOs qualified and willing to extend the technology to the remaining districts.

Finally, the adoption of the strategies mentioned above requires that participating organizations, including the MoH, UNICEF and the funding agencies, recognize that the primary constraint to the development of drug cost-sharing initiatives is almost certainly not a lack of start-up capital for initial drug inventories. (Depending on the length of the pipeline, which may be short if most products are purchased from local suppliers, the value of required start-up inventories may be as low as a three-month's supply, perhaps Rs 20,000 per health post.) The primary constraints to the widespread initiation of successful drug cost-sharing are more likely to be (1) the capacity to establish functional village health committees, capable of administrative oversight of health facilities and proper management of the revenues that will be collected, and (2) the ability to establish the supply system. These tasks should receive a significant share of the financial resources currently being made available by KfW and Nippon Foundation. If that is done, and the above described strategies adopted, a very substantial number of health facilities should be supported by effective drug cost-sharing schemes by the year 2000. That support should result in substantial improvement in the delivery and distribution of primary care services and may constitute an essential contribution to the very ambitious effort to establish a health facility in every VDC.

**ANNEX 1 TRACER DRUG LISTS**

**Annex 1A Tracer Drug List for District Hospitals**

(Also Applied at Regional Warehouses and Retail Pharmacies)

| NO. | PRODUCT                 | STRENGTH    | FORM |
|-----|-------------------------|-------------|------|
| 1   | Acetylsalicylic Acid    | 300 mg      | tab  |
| 2   | Aluminum Hydroxide      | 500 mg      | tab  |
| 3   | Aminophylline           | 100 mg      | tab  |
| 4   | Amoxicillin             | 250 mg      | tab  |
| 5   | Anti-Rabies             | 100 IU      | amp  |
| 6   | Atropine                | 1 mg        | amp  |
| 7   | Benzoic Acid+Salicyl    | 6+3%        | crm  |
| 8   | Benzyl Benzoate 25%     | 1L          | eml  |
| 9   | Chloramphenicol         | 250 mg      | cap  |
| 10  | Chlorhexidine Conc 5%   | 1L          | sol  |
| 11  | Chloroquine             | 150 mg      | tab  |
| 12  | Chlorpheniramine        | 4 mg        | tab  |
| 13  | Chlorpromazine          | 25 mg       | tab  |
| 14  | Co-trimoxazole          | 400+80 mg   | tab  |
| 15  | Dapsone                 | 50 mg       | tab  |
| 16  | Dexamethasone           | 500 mg      | tab  |
| 17  | Diazepam                | 10 mg/2ml   | amp  |
| 18  | Digoxin                 | 250mcg      | tab  |
| 19  | Ergometrine             | 200 mcg     | tab  |
| 20  | Ergometrine Methyl      | 0 125 mg/ml | amp  |
| 21  | Ether Inhalation        | 1-2%        |      |
| 22  | Ferrous sul +Folic Acid | 60+0 25 mg  | cap  |
| 23  | Furosemide              | 40 mg       | tab  |
| 24  | Furosemide              | 10 mg /ml   | amp  |
| 25  | Gentian Violet          | 25 grms     | pdr  |
| 26  | Glibenclamide           | 5 mg        | tab  |
| 27  | Glucose Inj Soln        | 5%          |      |
| 28  | Glyceryl Trinitrate     | 500 mcg     | tab  |
| 29  | Hydrochlorothiazide     | 50 mg       | tab  |
| 30  | Hydrochlorothiazide     | 25 mg       | tab  |
| 31  | Ibuprofen               | 200 mg      | tab  |
| 32  | Insulin                 | 40 IU/ml    |      |
| 33  | Isoniazid               | 100 mg      | tab  |
| 34  | Isoniazid               | 300 mg      | tab  |
| 35  | Lidocaine 2%            | 50 ml       | val  |
| 36  | Lignocaine Anaesth      | 1%          |      |
| 37  | Magnesium Sulphate      | 1kg         | pdr  |
| 38  | Mebendazole             | 100 mg      | tab  |
| 39  | Metoclopramide          | 10 mg       | tab  |
| 40  | Metronidazole           | 250 mg      | tab  |
| 41  | ORS                     | 1L          | pdr  |
| 42  | Oxygen Inhalation       |             |      |
| 43  | Paracetamol             | 500 mg      | tab  |

65

| NO. | PRODUCT                | STRENGTH   | FORM |
|-----|------------------------|------------|------|
| 44  | Paracetamol            | 125 mg/5ml | bot  |
| 45  | Phenobarbital          | 30 mg      | tab  |
| 46  | Phenoxymeth Penicillin | 250 mg     | tab  |
| 47  | Phenytoin              | 100 mg     | cap  |
| 48  | Piperazine             | 300 mg     | tab  |
| 49  | Povidone Iodine 10%    | 450 ml     | sol  |
| 50  | Procaine Penicillin    | 400000 IU  | val  |
| 51  | Promethazine           | 25 mg      | tab  |
| 52  | Promethazine           | 10 mg      | tab  |
| 53  | Propranolol            | 40 mg      | tab  |
| 54  | Pyrazinamide           | 500 mg     | tab  |
| 55  | Rifampicin             | 300 mg     | cap  |
| 56  | Rifampicin             | 150 mg     | cap  |
| 57  | Ringer's Lactate       | 500 ml     | bot  |
| 58  | Salbutamol             | 4 mg       | tab  |
| 59  | Salbutamol             | 2 mg       | tab  |
| 60  | Sodium Chloride        | 0.9%       | inj  |
| 61  | Tetanus                |            | inj  |
| 62  | Tetracycline           | 250 mg     | cap  |
| 63  | Tetracycline Eye       | 1%         | ont  |
| 64  | Water for Injection    | 5 ml       | amp  |

## Annex 1B Tracer Drug List for Primary Health Center

| NO. | PRODUCT                 | STRENGTH    | FORM |
|-----|-------------------------|-------------|------|
| 1   | Acetylsalicylic Acid    | 300 mg      | tab  |
| 2   | Aluminum Hydroxide      | 500 mg      | tab  |
| 3   | Aminophylline           | 100 mg      | tab  |
| 4   | Amoxicillin             | 250 mg      | tab  |
| 5   | Benzoic Acid+Salicyl    | 6+3%        | crm  |
| 6   | Benzyl Benzoate 25%     | 1L          | eml  |
| 7   | Chloramphenicol         | 250 mg      | cap  |
| 8   | Chlorhexidine Conc 5%   | 1L          | sol  |
| 9   | Chloroquine             | 150 mg      | tab  |
| 10  | Chlorpheniramine        | 4 mg        | tab  |
| 11  | Chlorpromazine          | 25 mg       | tab  |
| 12  | Co-trimoxazole          | 400+80 mg   | tab  |
| 13  | Dapsone                 | 50 mg       | tab  |
| 14  | Dexamethasone           | 500 mg      | tab  |
| 15  | Ergometrine             | 200 mcg     | tab  |
| 16  | Ergometrine Methyl      | 0 125 mg/ml | amp  |
| 17  | Ferrous sul +Folic Acid | 60+0 25 mg  | cap  |
| 18  | Furosemide              | 40 mg       | tab  |
| 19  | Furosemide              | 10 mg /ml   | amp  |
| 20  | Gentian Violet          | 25 grms     | pdr  |
| 21  | Glibenclamide           | 5 mg        | tab  |
| 22  | Glyceryl Trinitrate     | 500 mcg     | tab  |
| 23  | Hydrochlorothiazide     | 50 mg       | tab  |
| 24  | Hydrochlorothiazide     | 25 mg       | tab  |
| 25  | Ibuprofen               | 200 mg      | tab  |
| 26  | Isoniazid               | 100 mg      | tab  |
| 27  | Isoniazid               | 300 mg      | tab  |
| 28  | Lidocaine 2%            | 50 ml       | val  |
| 29  | Lignocaine Anaesth      | 1%          |      |
| 30  | Magnesium Sulphate      | 1 kg        | pdr  |
| 31  | Mebendazole             | 100 mg      | tab  |
| 32  | Metronidazole           | 250 mg      | tab  |
| 33  | ORS                     | 1L          | pdr  |
| 34  | Paracetamol             | 500 mg      | tab  |
| 35  | Paracetamol             | 125 mg/5ml  | bot  |
| 36  | Phenobarbital           | 30 mg       | tab  |
| 37  | Phenoxymeth Penicillin  | 250 mg      | tab  |
| 38  | Phenytoin               | 100 mg      | cap  |
| 39  | Piperazine              | 300 mg      | tab  |
| 40  | Povidone Iodine 10%     | 450 ml      | sol  |
| 41  | Procaine Penicillin     | 400000 IU   | val  |

| NO. | PRODUCT             | STRENGTH | FORM |
|-----|---------------------|----------|------|
| 42  | Promethazine        | 25 mg    | tab  |
| 43  | Promethazine        | 10 mg    | tab  |
| 44  | Propranolol         | 40 mg    | tab  |
| 45  | Pyrazinamide        | 500 mg   | tab  |
| 46  | Rifampicin          | 300 mg   | cap  |
| 47  | Rifampicin          | 150 mg   | cap  |
| 48  | Ringer's Lactate    | 500 ml   | bot  |
| 49  | Salbutamol          | 4 mg     | tab  |
| 50  | Sodium Chloride     | 0.9%     | inj  |
| 51  | Tetanus             |          | inj  |
| 52  | Tetracycline        | 250 mg   | cap  |
| 53  | Tetracycline Eye    | 1%       | ont  |
| 54  | Water for Injection | 5 ml     | amp  |

## Annex 1C Tracer Drug List for Health Posts

| NO. | PRODUCT                 | STRENGTH   | FORM |
|-----|-------------------------|------------|------|
| 1   | Acetylsalicylic Acid    | 300 mg     | tab  |
| 2   | Aluminum Hydroxide      | 500 mg     | tab  |
| 3   | Aminophylline           | 100 mg     | tab  |
| 4   | Amoxicillin             | 250 mg     | tab  |
| 5   | Benzyl Benzoate 25%     | 1L         | eml  |
| 6   | Chloramphenicol         | 250 mg     | cap  |
| 7   | Chlorhexidine Conc 5%   | 1L         | sol  |
| 8   | Chloroquine             | 150 mg     | tab  |
| 9   | Chlorpheniramine        | 4 mg       | tab  |
| 10  | Co-trimoxazole          | 400+80 mg  | tab  |
| 11  | Dapsone                 | 50 mg      | tab  |
| 12  | Dexamethasone           | 500 mcg    | tab  |
| 13  | Diazepam                | 10 mg /2ml | amp  |
| 14  | Ergometrine Methyl      |            | amp  |
| 15  | Ferrous sul +Folic Acid | 60+0 25 mg | cap  |
| 16  | Furosemide              | 40 mg      | tab  |
| 17  | Furosemide              | 10 mg /ml  | amp  |
| 18  | Gentian Violet          | 25 grms    | pdr  |
| 19  | Hydrochlorothiazide     | 25 mg      | tab  |
| 20  | Ibuprofen               | 200 mg     | tab  |
| 21  | Isoniazid               | 100 mg     | tab  |
| 22  | Lidocaine 2%            | 50 ml      | val  |
| 23  | Magnesium Sulphate      | 1 kg       | pdr  |
| 24  | Mebendazole             | 100 mg     | tab  |
| 25  | Metronidazole           | 250 mg     | tab  |
| 26  | ORS                     | 1L         | pdr  |
| 27  | Paracetamol             | 500 mg     | tab  |
| 28  | Paracetamol             | 125 mg/5ml | bot  |
| 29  | Phenoxymeth Penicillin  | 250 mg     | tab  |
| 30  | Piperazine              | 300 mg     | tab  |
| 31  | Povidone Iodine 10%     | 450 ml     | sol  |
| 32  | Procaine Penicillin     | 400000 IU  | val  |
| 33  | Promethazine            | 25 mg      | tab  |
| 34  | Rifampicin              | 150 mg     | cap  |
| 35  | Ringer's Lactate        | 500 ml     | bot  |
| 36  | Salbutamol              | 4 mg       | tab  |
| 37  | Tetracycline            | 250 mg     | cap  |
| 38  | Tetracycline Eye        | 1%         | ont  |
| 39  | Water for Injection     | 5 ml       | amp  |

**Annex 1D Tracer Drug List for Sub-Health Posts**

| <b>NO</b> | <b>PRODUCT</b>          | <b>STRENGTH</b> | <b>FORM</b> |
|-----------|-------------------------|-----------------|-------------|
| 1         | Acetylsalicylic Acid    | 300 mg          | tab         |
| 2         | Aluminum Hydroxide      | 500 mg          | tab         |
| 3         | Aminophylline           | 100 mg          | tab         |
| 4         | Amoxycillin             | 250 mg          | tab         |
| 5         | Benzyl Benzoate 25%     | 1L              | eml         |
| 6         | Chloramphenicol         | 250 mg          | cap         |
| 7         | Chlorhexidine Conc 5%   | 1L              | sol         |
| 8         | Chlorpheniramine        | 4 mg            | tab         |
| 9         | Co-trimoxazole          | 400+80 mg       | tab         |
| 10        | Ferrous Sul +Folic Acid | 60+0 25 mg      | cap         |
| 11        | Gentian Violet          | 25 grms         | pdr         |
| 12        | Lidocaine 2%            | 50 ml           | val         |
| 13        | Lignocaine Anaesth      | 1%              |             |
| 14        | Mebendazole             | 100 mg          | tab         |
| 15        | Metronidazole           |                 | tab         |
| 16        | ORS                     | 1L              | pdr         |
| 17        | Paracetamol             | 500 mg          | tab         |
| 18        | Paracetamol             | 125 mg/5ml      | bot         |
| 19        | Piperazine              | 300 mg          | tab         |
| 20        | Povidone Iodine 10%     | 450 ml          | sol         |
| 21        | Procaine Penicillin     | 400000 IU       | val         |
| 22        | Promethazine            | 25 mg           | tab         |
| 23        | Promethazine            | 10 mg           | tab         |
| 24        | Tetracycline            | 250 mg          | cap         |
| 25        | Tetracycline Eye        | 1%              | ont         |
| 26        | Water for Injection     | 5 ml            | amp         |

**ANNEX 2 MIX OF DRUGS USED FOR PRICE COMPARISONS**

## Annex 2 Mix of Drugs Used for Price Comparisons

|                      | Product                  | Strength    | Dosage Form | Unit Price in Rupees |                |         |                  |                |                |         |         |
|----------------------|--------------------------|-------------|-------------|----------------------|----------------|---------|------------------|----------------|----------------|---------|---------|
|                      |                          |             |             | Qty to Hill HPs      | LMD '94 Tender | UNICEF  | Int'l Sample (1) | Max Ktm Retail | Min Ktm Retail | UMN     | BNMT    |
| 1                    | Acetylsalicylic Acid     | 300 mg      | Tab         | 3,000                | 0 1200         | 0 1616  | 0 2163           | 0 4200         | 0 1500         | 0 1441  | 0 1200  |
| 2                    | Aminophylline            | 100 mg      | Tab         | 1,000                | 0 1200         | 0 2293  | 0 3416           | 0 8000         | 0 2000         | 0 1202  | 0 1293  |
| 3                    | Amoxicillin              | 250 mg      | Tab         | 10,000               | 2 4500         | 1 6740  | 2 1461           | 4 6200         | 3 5000         | 1 9770  | 2 3500  |
| 4                    | Chloramphenicol          | 250 mg      | Tab         | 3,000                | 1 3000         | 1 3730  | 1 4516           | 3 3000         | 1 8000         | 0 8727  | 1 5500  |
| 5                    | Chlorpheniramine Maleate | 4 mg        | Tab         | 1,000                | 0 0491         | 0 0759  | 0 1651           | 0 2000         | 0 0500         | 0 0482  | 0 0518  |
| 6                    | Co-trimoxazole           | 400/80 mg   | Tab         | 4,500                | 0 7500         | 0 7630  | 0 8482           | 1 4600         | 1 1000         | 0 7421  | 0 9000  |
| 7                    | Diazepam                 | 10 mg/2ml   | Amp         | 10                   | 3 4600         | 4 6720  | 5 1574           | 12 7500        | 3 6700         | 5 3000  | 9 5000  |
| 8                    | Ergometrine Methyl       | 0 125 mg/ml | Amp         | 20                   | 5 0660         | 4 5520  | 6 9276           | 17 6600        | 17 6600        | 7 2000  | 15 2200 |
| 9                    | Furosemide               | 10 mg/ml    | Amp         | 10                   | 3 3600         | 6 1090  | 5 0416           | 4 1000         | 4 1000         | 3 4000  | 3 1600  |
| 10                   | Furosemide               | 40 mg       | Tab         | 100                  | 0 2900         | 0 4312  | 0 3700           | 0 5600         | 0 4500         | 0 3380  | 0 3100  |
| 11                   | Gentian Violet           | 25 g        | Pdr         | 3                    | 16 0200        | 71 7400 | 94 0677          | 40 0000        | 32 0000        | 25 0000 | 16 3200 |
| 12                   | Ibuprofen                | 200 mg      | Tab         | 300                  | 0 4288         | 0 6648  | 0 5180           | 0 6500         | 0 6000         | 0 3100  | 0 4300  |
| 13                   | Mebendazole              | 100 mg      | Tab         | 1,500                | 0 8000         | 0 6408  | 0 3815           | 2 4500         | 1 2000         | 0 3680  | 0 9660  |
| 14                   | Metronidazole            | 200 mg      | Tab         | 3,000                | 0 4250         | 0 4348  | 0 4725           | 0 7700         | 0 6000         | 0 2900  | 0 4500  |
| 15                   | Paracetamol              | 500 mg      | Tab         | 9,000                | 0 3000         | 0 0855  | 0 3245           | 0 6000         | 0 5900         | 0 2160  | 0 2600  |
| 16                   | Ringer's Lactate         | 500 ml      | Bot         | 20                   | 20 0000        | 85 6400 | 48 3863          | 28 0000        | 28 0000        | 18 8500 | 24 0000 |
| TOTAL COST IN RUPEES |                          |             |             |                      | 38,254         | 30,487  | 37,382           | 77,768         | 56,272         | 30,504  | 39,000  |

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