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HEALTH SECTOR FINANCING PROJECT

Ministry of Health
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REPORT 27:

STRATEGY FOR EVALUATION OF THE
HEALTH SECTOR FINANCE PROJECT
PHARMACEUTICAL COMPONENT AND
PROGRESS OF THE FOCUSED
ASSESSMENTS



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PROGRESS OF THE FOCUSED
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ACRONYMS

ADSP	Review of Secondary Data and Literature
APBN	Central level program funds used at provincial levels
APBD	Province and kabupaten budget funds
ARI	Acute Respiratory Infections (and Special Program)
BINDESMAS	Bina Kesehatan Masyarakat (Director General for Community Health Development)
BKKBN	National Family Planning Coordinating Board
CDD	Control of Diarrheal Disease (Special Program)
CHIPPS	Comprehensive Health Improvement Project - Province Specific (AID-funded health project)
CSP1, CSP2	Child Survival Pharmaceutical Studies 1 and 2
DDD	Defined Daily Dose
DEM	Drug Estimation Model computer program
DMS	Drug Management Study
DUS	Drug Use Study
EPI	Expanded Program on Immunization
FAs	Focused Assessments
GIZI	Nutrition (Special Program)
GFK	Regency Pharmacy Warehouse
HSFP	Health Sector Finance Project
HSFP-PC	Health Sector Finance Project, Pharmaceutical Component
Kabupaten	Regency (both urban or rural)
Koperasi	Private pharmacy cooperatives administered by hospitals
MCH	Maternal and Child Health
MPS	Manpower Study
ORS	Oral Rehydration Salts (Oralit)
ORS MAP	Computer program to monitor ORS distribution
P2M	Pemberantasam Penyakit Memlar (Communicable Disease Control)
PMU	Project Management Unit
POM	Pengawasan Obat dan Makanan (Food and Drug Administration)
Pusat	National level of the health system
PusKesMas	Community Health Center
Repelita V	Fifth National Five Year Development Plan
Rumah Sakit	Hospital ("A" and "B" are for referral and teaching)
RX	RX Prescription Analysis computer program
TOR	Terms of Reference
YANMEDIK	Pelayanan Medik (Director General for Medical Services)

I. TERMS OF REFERENCE FOR EVALUATION IN THE PROJECT PAPER

A. Objectives of the HSFP and the Pharmaceutical Component

The Project Paper specifies that the end-of-project status, which will allow the GOI and USAID to measure whether the HSFP has accomplished its purpose, will be a 35 percent increase in total government spending on child survival programs in real terms compared to government spending in 1987. The Pharmaceutical Component will support this allocative shift by encouraging policies and procedures, government pharmaceutical procurement, distribution, and use which improve the therapeutic impact of GOI drug expenditures. In addition, it will support the objectives of the other components of the HSFP by contributing to the implementation of a database and analytic capacity needed by policy makers to make rational allocative decisions.

The HSFP-PC will attempt to accomplish its overall purposes by undertaking a logical sequence of activities designed to:

- **Identify the factors underlying problems** in procurement, distribution, and use;
- **Develop and test a range of targeted interventions** to correct these problems on a small scale; and
- **Organize successful interventions** into packages which will be demonstrated and evaluated in a sample of provinces.

Underlying problems in pharmaceutical management and use are initially being explored in a focussed assessment of the public pharmaceutical sector designed to identify structural and behavioral problems which impede efficient utilization of the pharmaceutical budget. Based upon the factors identified by the assessment, the project will formulate and test management, training, and communications interventions which can lead to more rational drug use. Examples of such interventions identified in the Project Paper include a newsletter to communicate directly with providers about rational prescribing or communications programs designed to better inform and educate the public about appropriate pharmaceutical use.

There is no single intervention that can address the constellation of causes that affect rational drug use. Emphasis will be placed in the Project on organizing individual interventions into coherent packages which can be implemented on a province or kabupaten level to attack problems in a coordinated manner. **Three criteria are specifically mentioned as indicators of success** of these packages of interventions in the demonstration areas:

- Pharmaceuticals will be more rationally prescribed;
- Expenditures among and within different therapeutic categories of drugs will be changed to reflect more cost-effective allocation within the drug budget; and

- Larger expenditures will be made on pharmaceuticals which directly support child survival programs.

B. Examples of Specific Problems in Drug Management and Use

To put the evaluation indicators in context, the Project Paper gives examples of specific problems in budget allocation and rational use which prevent maximum therapeutic benefit from pharmaceuticals purchased in the public sector. The problems cited, and the type of target changes in behavior they imply, include:

- Problem:** Antibiotics are grossly overprescribed relative to their therapeutic need, and represent the single most costly drain on the pharmaceutical budget.
- Target:** Reduction in use of antibiotics to treat health problems where they are not indicated.
- Problem:** Regulations which limit dispensing to three days supply encourage sub-therapeutic dosing, particularly for antibiotics.
- Target:** Increase in proportion of prescriptions with correct dosing.
- Problem:** There is little association between epidemiologic need and ordering, with drugs usually being ordered incrementally based on previous year's order.
- Target:** Better agreement between drug order and theoretical need based on standard treatment for observed morbidities.
- Problem:** Products not indicated in standard treatments of important health problems (e.g. kanamycin, oxytetracycline injection) and ones which have little impact on public health (e.g. antitussives, expensive vitamin preparations) are ordered out of proportion to need.
- Target:** Reduction in proportion of budget spent on products which are not included in standard treatments for common problems.
- Problem:** There is over-reliance on injectable drugs regardless of therapeutic justification.
- Target:** Decrease in the number of injections per case.

C. Cooperation with Child Survival Special Programs

The Ministry of Health has concluded that government resources should be focussed on programs which directly impact infant and child mortality and promote child survival. The programs designated are:

- Expanded Program for Immunizations (EPI);
- Nutrition (GIZI);
- Diarrheal Disease Control (CDD);
- Family Planning (BKKBN);
- Maternal Child Health (MCH); and
- Control of Acute Respiratory Infections (ARI).

The burden of recurrent costs for fixed facilities and the supply of drugs for curative care has caused a relative shift in resources out of child survival programs.

One of the objectives of the HSFP-PC is an overall increase in expenditures on child survival pharmaceuticals. **Products that can be clearly identified as child survival products (ORS, iron and folate supplements, child and maternal immunizations) are integral parts of the special programs.** Promotion of the goals of the special programs, and the relative shift of resources to support their pharmaceutical activities, is a final measurable target of the HSFP Pharmaceutical Component.

In order to measure progress of the HSFP-PC toward its overall objectives, there is a need to establish a basic strategy for evaluation and to define the way in which the three indicators of success will be operationalized within the strategy. Specific evaluation measures over time. In addition, since the project will develop and test a number of specific interventions, basic principles will need to be established for evaluating the success or failure of individual intervention activities.

II. BASIC STRATEGY FOR PROJECT EVALUATION

A. Principles of Project Evaluation

There are two types of measures which are commonly used to evaluate intervention projects:

- **Process measures** which examine the frequency, timing, and efficiency of program activities, and suggest ways to improve organization;
- **Outcome measures** which review the successes and failures of activities in achieving specific measurable objectives, often in order to decide whether to continue to fund the activities or to expand or copy them elsewhere.

The **HSFP-PC** should routinely collect data to allow examination and evaluation of **program processes**. These data would include lists, descriptions, and schedules of activities; counts of program outputs such as workshops conducted, numbers of personnel trained, storage facilities upgraded, etc.; and costs of individual activities. A periodic or end-of-project analysis of this information will allow decision makers to judge whether the program produces outputs according to plan, and will permit analysis of the efficiency of individual activities.

Evaluating outcomes will be more difficult. The PMU must specify carefully the intended outcomes of the project as a whole and of each component intervention, then develop measurable operational definitions of these outcomes. In a project as large and multidimensional as the HSFP-PC, where the nature and scope of individual interventions will only be known as the project evolves, the process of defining outcomes will be quite complex. Careful attention will need to be paid to defining the most useful intervention and evaluation units so that data can be collected and organized at the correct level. Finally, **reliable and affordable ways for collecting the data required to measure outcomes need to be developed.**

Interventions to improve drug management and use are designed to bring about changes in behavior. To evaluate change correctly, values of the outcome measures must be examined at least before the program begins (baseline) and after the intervention has been conducted (follow-up). However, evaluations differ in how often they measure data on outcomes. If outcomes are measured once at baseline, and once again after the intervention, a study is said to have a **pre-post design**. If outcomes are measurable at a number of points over time, for example, at a number of monthly or yearly intervals prior to and following an intervention, the study has a **time series design**. Time series designs are often stronger for analysis, because preexisting trends can be seen and controlled for, and changes in program impact over time are easier to examine.

Many evaluations rely on the use of retrospective data to measure outcomes. Examples of such data in the case of the HSFP-PC would be patient registers at Puskesmas which contain diagnosis and prescription; inpatient medical records at rumah sakit; or GFK drug

order, delivery, and stock records. The advantage of using retrospective data for evaluation is that outcome measures are produced routinely by the system so they are not as costly to collect, and that they can often be organized into time series designs.

With either a pre-post or a time series design, the most important feature that sets valid evaluation studies apart is the use of an appropriate **comparison group**. Without such a group, it is never possible to determine whether observed changes were due to the impact of interventions, or were simply a reflection of other features of the external environment which were changing at the same time.

The comparison group should be as similar to the group receiving the intervention as possible, and their outcomes should be measured in the same way. Ideally the unit of analysis (people, facilities, kabupaten) are assigned by chance to an intervention or comparison group after they are selected to be included in the study, a process called **random assignment**. A comparison group might also be selected from a region where the program was not implemented.

Usually, a **sample** of the people or behaviors of interest is taken to save time and effort. However, the way a sample is chosen can often strongly influence the results. A sample should be typical of the overall group of interest. The best way to ensure this is to follow strictly some process for selecting it randomly. In general, the larger the size of the sample, the more reliable the results; measurements from samples which include less than 50 or more units tend to be somewhat unreliable.

B. The Structure of the Drug Use System

The public sector drug use system is institutionally and organizationally complex. The planning, procurement, distribution, and use of drugs depends of the coordination of decisions at many different levels. These decisions determine which and what quantity of drugs are supplied, and how they are ultimately used by providers and consumers. Structural and behavioral factors at every organizational level of the drug use system can limit the rational utilization of drugs.

The drug use system is structured around policies and decisions at the **pusat level** which determine key factors like financing, pricing, procurement, information flow, and overall coordination of the lower levels. Inpres and Askes, the two major sources of drugs in the public system, are both administered centrally, as are the special programs like CDD, ARI, EPI, and GIZI.

Responsibility for coordination of the various components of drug supply and delivery rests at the **provincial level**. Final decisions about drug procurement and determinations about the APBD and APBN budgets are made here. Drugs supplied to special programs are allocated for the most part on a provincial basis. In addition, provincial directorates supervise and coordinate the hospitals and health centers at which drugs are delivered. Because of variations in environment and other provincial characteristics, province-level differences are likely to be responsible for differences in the impact of certain interventions.

The **kabupaten** is the hub around which the **planning, procurement, and delivery of drugs revolves** for a network of PusKesMas and rumah sakit. Kabupaten teams integrate the yearly drug requests from health facilities within their administrative areas, rationalize the magnitude of these orders to the available level of funding, and forward them to the province for further integration and execution. The GFK is the storage and distribution point for virtually all drugs used in public facilities. The job description of the head of the GFK includes many responsibilities for planning and operating the supply system, supervising the supply activities of the rumah sakit kabupaten and PusKesMas, and maintaining the quality of products at all levels. Most interventions directed at improving the supply and handling of drugs, coordinating information flow, or training health system personnel for better prescribing are best managed or implemented at the kabupaten level.

Rumah sakit provide both secondary and tertiary medical care at the kabupaten and provincial levels, and also serve as primary care facilities for population living in their catchment areas. The "A" and "B" rumah sakit are the clinical training facilities for medical education, and are therefore critical sites at which all physicians in-training learn principles of diagnosis and drug therapy. Many rumah sakit also administer pharmacy services such as Kopersasi which are separate from, but important adjuncts to, the formal drug supply system.

PusKesMas are the delivery points for most of the outpatient pharmaceuticals dispensed in the public system. Medical care is provided only to a limited extent by doctors (an estimated 20-30 percent of visits); most prescribing is done by nurses and other paramedics who often have not had extensive exposure to principles of rational drug therapy. Drugs are managed and dispensed by personnel who often have had limited training for either task, although within Repilita V, Inpres is undertaking a program to provide each PusKesMas with an Assistant Pharmacist. The **health delivery points below the PusKesMas--the PusKesMas pembantu, pos yandu, pos oralit, and kaders--are** supplied with drugs and supervised by staff from the PusKesMas. Very little is known about the volume of drugs delivered at the sub-PusKesMas level, or about the overall quality of care.

Finally, the **community/patient level** is perhaps the most important in determining whether the system is effective in delivering drug therapies. Community members make key decisions about when to seek care, and about what type of public or private sector provider to utilize. Patient expectations when they visit health providers, and their interactions during the medical encounter, exert an influence of unknown proportion on the drugs patients eventually receive. Finally, patient understanding and willingness to pay for the prescribed therapy, and their ability to comply with the regimen of care, exerts further influence on whether drugs will achieve their intended health impact.

C. Proposed Structure of the Evaluation Process

The HSFP-PC will mount interventions at many or all levels of the drug use system. However, there are **two principal levels at which these interventions must be coordinated and evaluated--the province and the kabupaten**. Because of this, it is recommended that the overall project evaluation be organized primarily around information collected at these two levels.

There is no prescribed list of interventions to be implemented by the HSFP-PC. Instead, according to the plan laid out in the Project Paper, details of the nature and scope of interventions will be based on the results of the Focussed Assessments; activities may vary from area to area, and during the phase of the project when interventions are being tested, many of these activities will be limited in scope until it is determined whether or not they are effective. A variety of activities will occur in the study provinces over the life of the project, and **it will be impossible to estimate the overall impact of the project without a comparison at the provincial level.**

The task of coordinating, managing, and evaluating intervention activities will be formidable. Maintaining involvement with provincial administration and overseeing activities in all six of the provinces included in the FAs is probably beyond the capacity of the project staff. Because of the need for comparison areas where intervention packages will not be implemented, it is recommended that **three provinces become "intensive intervention" provinces, and three become "comparison" provinces.** In order to better coordinate with the activities of the Hospital and Social Financing Components, it is recommended that the HSFP-PC choose the same intervention provinces - West Sumatra, East Java, and Bali. This would mean a substitution of Bali for one of the provinces in the FAs.

In the comparison provinces, the project should develop the information systems necessary to collect data on the principle evaluation indicators (see below). The implementation of these information systems will in itself be a meaningful intervention to improve management and prescribing, and the change due to this activity will provide a minimum against which the more intensive activities in the intervention provinces can be measured. In order to minimize the financial and administrative cost of data collection, it would be best to **rely for the provincial comparisons on kabupaten data that are available at the provincial level** (such as annual drug procurements or regular morbidity reporting systems). During the development of information systems for evaluation, these data should be checked for reliability and completeness, and special systems organized to deal with existing limitations.

Within an **idealized intervention process**, there would be up to four stages of activity (Figure 1). During the **baseline phase**, provincial administrators will be involved in planning the project, and data systems for collecting evaluation information should be established and tested. Kabupatens will be randomly selected for a comparison group in the comparison provinces, and for intervention groups or control groups in the intensive intervention provinces.

During the **phase of pilot testing individual interventions**, subsets of kabupatens in the intervention groups would be randomly chosen as test sites for piloting various activities. For example, puskesmas providers in one subset of kabupatens might have intensive training programs on the use of standard diagnosis and treatment protocols; another subset might be selected to have computers installed in the GFK to manage drugs and do computer-based procurement planning; yet a third subset might be test sites for an intensive community education and marketing program for ORS involving using kaders and other

outreach workers. The impacts of these activities would be measured in relation to changes in target outcomes in the remaining kabupatens in the intervention groups where no pilot activities were conducted during this period.

It may prove to be the case that some facility-specific interventions would be best tested not on kabupatens, but on facilities within a kabupaten. An example of such an intervention might be the introduction and training in the use of appropriate diagnostic equipment at the PusKesMas, where what the measurable outcome would be an increase in correct diagnosis. For these PusKesMas- or hospital-based interventions, the same principles of random selection and pre-post measurement would be applied.

After determining which of the individual interventions have been effective, the high impact ones will be included in comprehensive intervention packages, as envisioned in the Project Paper. The packages might combine interventions with a single unifying focus; for example, one package could consist of activities all aimed at improvement of treatment of ARI, while another might focus on diarrheal disease (see Annex __). Alternatively a single package of successful management-oriented interventions could be combined with the most promising prescribing-oriented interventions.

During the **phase of implementing intervention packages**, all kabupatens in an intervention group would receive the same package of activities. The impact of these combined packages (in addition to remaining impacts from the pilot testing phase) would be measured in relation to the control group of kabupatens in the intensive intervention provinces. If there is to be no **crossover phase**, provincial level effects would also be assessed at this time.

In order to address issues of equity among kabupatens in the intervention provinces, administrators might prefer assistance from HSFP-PC in implementing a set of interventions from the successful packages within the comparison kabupatens at a later time. Advantage can be taken of such a crossover phase to not only measure the impact of the intervention package when it occurs at a different time, but also to assess the decay of effects in kabuptens where the interventions were completed earlier. If a crossover phase is to be included, gathering data for provincial comparisons would be delayed until the end of that phase.

III. OPERATIONAL MEASURES FOR EVALUATION INDICATORS

The intervention phase of the HSFP-PC will be a complex undertaking for many reasons. It will often involve several activities taking place in a single location at a single time, and many interventions will need to be spread and coordinated over large geographic areas. The individual interventions will also be complex, with multiple components and multiple dimensions of outcome. And finally, the overall objective of the project is to assemble these individual interventions into integrated packages which are capable of producing widespread improvements in pharmaceutical efficiency and effectiveness. The development of measurement strategies and specific operational measures that are capable of evaluating these activities will require both care and creativity.

A. Methods of Data Collection

There are many methods which can be used to collect data to evaluate different aspects of the HSFP-PC. The decision about which method will be most appropriate in a particular situation must be based on:

- The **nature of the problem behavior** which the intervention seeks to change;
- The **availability of resources**, technical expertise, and data systems necessary to collect, process, and analyze the data;
- The amount of **time available** to complete the process; and
- The capacity to collect the data reliably through an ongoing **information system**.

Both **quantitative and qualitative data** can be useful in evaluating project impacts. Each provides a different type of information about the nature and magnitude of change. Although the results of a program are most often evaluated in a quantitative manner, there might be opportunities to use qualitative techniques during the HSFP-PC to examine aspects of what has changed after certain interventions have occurred.

1. Methods for collecting quantitative data:

- **Existing data systems**--the least costly alternative if data are available, reliable, and suitable to measure the outcomes being studied.
- **Sample surveys**--the most widely used quantitative method to gather many different types of information, once or at multiple points in time, about groups of people, institutions, or events (e.g., prescriptions).
- **Observational studies**--these studies, where aspects of behaviors of interest are recorded by a trained observer, can be either quantitative or qualitative.

2. **Methods for collecting qualitative data**

- **Case studies**--a useful technique which can combine quantitative and more subjective data to examine changes in an institution.
- **Focus groups**--useful to observe and record opinions, understandings, or beliefs in an interactive setting.
- **Depth interviews**--because they are one-on-one interactions with less structure than a questionnaire, respondents are often more free to volunteer important information.

The development of a useful and reliable information system is itself an intervention that can result in improved decision-making capacity. For this reason, and also because of the fact that existing data are always much less expensive and logistically easier to process and organize, **HSFP-PC should rely as much as possible on routinely collected data.**

B. Measurement of Overall Project Indicators of Success

Two data collection and analysis systems that rely on survey methods, but which have potential for routine managerial application, are the Drug Estimation Model and the RX Prescription Analysis System; each of these tools has been used successfully in one of the C&P studies. Both the DEM and the RX utilize retrospective data that are routinely kept by the drug system, so they are relatively inexpensive to implement.

As stated above, the overall indicators of success for the HSFP-PC are that:

- Pharmaceuticals will be more rationally prescribed;
- Expenditures among and within different therapeutic categories of drugs will be changed to reflect more cost-effective allocation within the drug budget;
- Larger expenditures will be made on pharmaceuticals which directly support child survival programs.

Using the DEM and the RX, specific operational measures of progress toward these objectives can be developed.

The RX is simple in structure. Using as reference a coded list of health problems and drugs, the following information is recorded on a case-by-case for individual prescribing episodes: age, sex, date, type of provider, diagnosis, drug, and dose. Samples of episodes can be selected from Puskesmas or rumah sakit registers or medical records to characterize the prescribing patterns in these facilities.

From these inputs, a variety of analyses of rational prescribing can be produced. After consultation with the Consensus Group, specific measures that are of greatest importance

to child survival and drug use issues can be tracked over time in intervention and control provinces to evaluate the first project objective, for example:

- Percent of under-5 cases of diarrhea receiving ORS;
- Percent of under-5 cases of ARI and diarrhea receiving antibiotic; and
- Percent of single health problem cases receiving four or more drugs.

The DEM requires four types of data to produce all its outputs;

- The most important data are **measures of drug consumption by individual product** for some administrative unit and specified period of time. These measures--which can be derived from drug orders, receipts, or disbursements - should include quantities of all drugs supplied by all sources;
- **Basic product information** such as therapeutic class, units and cost per package, and defined daily dose in the most common application, is used to generate summary estimates and statistics;
- The **morbidity profile** of cases seen by the administrative unit - the number of cases by health problem and age group - is used in conjunction with
- **Standard drug treatments** to generate a theoretical estimate of morbidity-based on need for drugs.

Using the DEM, consumption data can be analyzed by volume or cost, by single drugs or by therapeutic class, and for single administrative units or for collections of units. In addition, observed consumption can be contrasted with theoretical need if standard therapies has been followed. Using the DEM, it will be possible to develop a variety of operational measures to evaluate the second and third project indicators of success, for example:

- DDDs of antibiotics per 10,000 rupiah spent on antibiotics;
- Percent of rupiah spent on antibiotics which are spent on injectable antibiotics;
- Ratio of rupiah spent on ORS to rupiah sent on antidiarrheals;
- DDDs of antitussives ordered per ARI visit; and
- Rupiah spent on child survival drugs (vaccines, ORS, iron, folate) per child under five in province.

C. Evaluation of Individual Interventions

There are a wide variety of interventions that might be implemented at each level of the drug system with potential for improving management and use of pharmaceuticals; a number of these strategies are presented in Table 1. It is impossible to know which collection of these interventions will eventually be tried during this project, since the outputs from the FAs will play such a large role in defining the key problem areas to be addressed. Whichever interventions are tried, in addition to the overall project evaluation indicators, **specific evaluation measures will need to be developed for each separate intervention** to be able to judge its impacts.

As each particular intervention is being designed, evaluation indicators will need to be specified, and the data systems put in place to measure them before and after implementation. Some examples of **measurable outcome indicators across the dimensions of knowledge, attitudes, behavior, and clinical impacts** are presented in Table 2, along with possible data collection strategies to measure them.

IV. PROGRESS OF FOCUSED ASSESSMENTS

A. Manpower Study

1. Status of the Activity

- Data on staffing, qualifications, and job activities have been collected from personnel working in drug management and use at all levels in the six sample provinces, and from MOH personnel in Jakarta. Supportive data in the form of national and local qualifying standards for each job category, and relevant job descriptions were also obtained.
- Descriptive narratives have been completed for each of the six provinces identifying current manpower, and reviewing the organization and process for drug planning, procurement, and supply management. Processing is underway to summarize these data in tabular form, and to draw general conclusions about manpower needs; a status report as of July 4 is appended.
- The contractor is having difficulty organizing the data in a way that is informative to the Consensus Group, and which satisfies the TOR for this activity. Given the difficulties in finding a useful format for presentation, and given the magnitude of the data, it is likely that reporting will not be completed on schedule by the end of July.

2. Selected Highlights of Interim Results

- The drug supply system is generally well-staffed or even overstaffed at the provincial level; personnel typically have a high exposure to training. At the kabupaten level, many units are understaffed, and many required processes are carried out in an ad hoc manner; personnel often have less than adequate or no training for their functions.
- Time management among Puskesmas doctors is a serious problem. Time spent in the care of patients is often compromised by the amount of time required to perform administrative responsibilities, attend meetings, and carry out necessary social functions.
- In-service training is for the most part concentrated at the upper managerial levels in all units, and the training programs tend to be conceptual rather than practical in nature.

- Most positions, even ones where technical skills are necessary, do not specify any required qualifications. The personnel selection process is less than optimal because managers have no authority to recruit; hiring decisions are often made outside of the operating unit, and for reasons other than qualification to perform the job.
- There is no clearly specified ladder of advancement.

B. Drug Management Study

1. Status of the Activity

- Data has been collected from 11 of 12 hospitals, and 17 of 18 PusKesMas in the intended sample. Data from one hospital were is such disarray as to be unusable, and one PusKesMas had been flooded and all records destroyed. Only 12 of 18 doctors heading PusKesMas were available to be interviewed; 4 positions were not filled; and 2 were on vacation.
- Processing of data from 4 of 6 kabupaten has been completed, and the remaining two are almost completed.
- The report is on schedule for completion at the end of July.

2. Selected Highlights of Interim Results

- The stated principle of "bottom-up" planning is not feasible at the current time. The reasons for this are both structural and operational:
 - The GFK are administered by POM, hospitals by Yanmedik, and PusKesMas by Bindemas; this required a difficult to achieve degree of administrative coordination.
 - The necessary skills to provide accurate data for planning drug supply are missing at the PusKesMas level; doctors have too little time to do planning, and stock managers often have only an elementary school education.
 - The flow of information about drug lists, budget, and pricing has built-in problems in sequencing and timing, such that orders need to be completed and sent on before necessary information is available.
- A serious training deficit among GFK managers is that they have been given very little practical knowledge about their role as distributors.

- The administration of drug supplies at "B" and "C" hospitals is much better than at "D" hospitals or in Puskesmas. Pharmacists and assistant pharmacists are not available at the lower levels, and the persons who are administering supplies do not have the necessary training or experience to carry out this function effectively. Personnel in "B" and "C" hospitals may be a potential resource for training and supervision for lower levels.
- Product quality assurance is difficult to administer because distribution is not monitored by manufacturer or lot number.
- The use of three-year trends for projection of need would be adequate and implementable at the GFK level is supported by computers, as has been done during the CHIPPS Project in West Sumatra.

C. Drug Use Study

1. Status of the Activity

- A revised design, protocol, and instruments have been submitted to the PMU, and approved for field testing pending resolution of issues involved with sampling, the use of standard treatments, the role of interviews and other strategies for collecting data on motivating influences, and selection of the pilot test site.
- There has been substantial progress in the development of the protocol for this study, particularly the strategy and instruments for collecting retrospective drug use data in the rumah sakit.
- Pilot test of the study methods is planned for early August, and the study is scheduled to go to the field in September.

2. Technical Issues Addressed During this Consultancy

- Extended discussions were held with the implementor on the size of the retrospective prescription sample in rumah sakit and Puskesmas, and the method used to sample these prescriptions. The following points were made:
 - No single sampling method will be able to be consistently applied in all facilities (especially hospitals) due to variations record-keeping. Prior to entering the field and before making final decisions on sampling, the implementor should contact each hospital to find out whether records are patient- or admission-based, how long they are kept, and to determine the ratio of pediatric to total admissions.

- A key principle in sampling visits is that they be spread throughout the calendar year to account for seasonal effects. Another key principle in the rumah sakit inpatient sampling is that all ages and a representative distribution of admission diagnoses be sampled, even if the sample is restricted to four services (pediatrics, medicine, surgery, and obstetrics/gynecology); this is necessary to get reasonable estimates of total drug use and cost per admission.
 - By over-sampling visits by under-5s, the study would be much more powerful when examining drug use by children, especially when looking at diagnosis-related subgroups of interest (ARI, diarrhea). A simple strategy for increasing the proportion of under-5s sampled by about 70 percent was developed (Annex __).
 - Based on expected number of cases in important subgroups, it is recommended that 250 total outpatient cases per Puskesmas and per rumah sakit be sampled; for inpatients, it is suggested that 150 pediatric and 150 adult cases (from various wards) be selected.
- Since the DUS will only cover 18 Puskesmas and 12 hospitals, its ability to measure motivating influences for prescribing practices by way of a quantitative interview is severely limited. Only 35-50 providers are expected to be seen in the Puskesmas; developing quantitative estimates of the importance of particular factors in determining prescribing practice with that sample size is unwarranted. In addition, although the prescriber questionnaire has undergone extensive modifications, there is still no evidence that it addresses the key issues underlying prescribing--in a closed interview, answers cannot be given to questions that are not asked. The following was recommended:
- The quantitative interview should be dropped from this study, and saved for a later time when it is more certain that the questions are the most relevant ones and the sample of providers is larger.
 - An observational study of prescriber-patient interactions and dispenser-patient interactions should be substituted in its place. About fifty observations of each type should be conducted in each facility. Such a study would begin to get at neglected factors in the process of care that are important in misuse of drugs.
 - If possible, a small series of focus groups or open-ended depth interviews should also be added to address motivations, beliefs, and provider expectations in a more qualitative way, and to provide guidance for the development of future in-depth studies of the dynamics of drug use behavior.

- The comparison of observed prescriptions to standards is much more difficult and complex than it appears. The standards that are currently published by BinKesMas are not well-suited for this purpose. Rather than trying to determine whether each individual prescription is appropriate or not - a determination that has a low degree of reliability - it would be preferable to identify certain clear standards **only for ARI and diarrhea prescribing** either case or in the aggregate. Examples of aggregate standards are the Ministry of Health policy that 80 percent of cases of child diarrhea should receive ORS, and that no more than 20 percent of ARI cases should receive antibiotics. Prescribing antibiotics for less than the recommended number of days is a standard that could be evaluated on a case-specific basis.

D. Review of Secondary Data and Literature

1. Status of the Activity

- The process of review of secondary documents is about 60 percent complete, while data summary for support of the FAs is only 25 percent complete. Five volumes of abstracted articles have been prepared. The review process started too late to contribute to design of the FAs.
- There is need to develop a strategy for synthesis of relevant findings from the literature and data reviews, and a mechanism for integrating these findings into the process of analysis of the FAs and formulation of interventions. This synthesis is unlikely to be complete by September when the contract for the ADSP expires, and the DUS will still be in its field work phase, so if the ADSP is to accomplish its purpose, the activity must be continued in some form beyond that time. Additional technical assistance may be helpful in this process (see below).
- If the items proposed for ADSP II, such as development of standard treatments for hospitals, a plan for drug service in villages, or preparation of other material to support interventions, is to proceed as planned, a TOR must be drafted to cover these activities.

E. Next Steps in the Process of Formulating Interventions

As the result of the FAs are reported to the Consensus Group, there will be increasing interest in designing and mounting interventions to address identified problems. In order to avoid the potential pitfall of moving forward with interventions before all results are known, and before a careful and cost-effective intervention plan can be developed, it would be useful to draft a clear strategy for moving from the FAs into the testing of pilot interventions. This strategy should cover at least two key issues: additional formative

studies of the dynamics of problem behaviors, and description of the process of formulating and testing interventions.

1. Additional Formative Studies of the Dynamics of Problem Behaviors

The Social Marketing Study (SMS) was originally conceived as a broad-ranging examination of the environmental and behavioral factors which underlie misuse of drugs by prescribers, pharmacists, and patients. The vast scope of the study meant it had limited utility for learning about the **dynamics of behavior which underlie specific important child survival problems**, such as overuse of antibiotic injections in ARI, failure to use ORS to treat diarrhea, or failure to complete a full course of immunizations. In order to design appropriate interventions targeting these problems, more in-depth and focused behavioral research is indicated.

The cancellation of the SMS provides an opportunity to rethink the role of behavioral research in the design and testing of interventions. The DMS and MPS have both begun to identify problems in institutional structure, decision-making, and the conduct of day-to-day activities related to drug planning, procurement, distribution, and storage. In a similar way, the DUS will identify specific problem behaviors in drug use among prescribers and dispensers in the rumah sakit and Puskesmas. These problems must be organized coherently, and priorities for intervention determined according to their importance in reducing the cost-effectiveness and clinical impact of pharmaceuticals.

Simply documenting the existence of problems does not always provide insight into their cause or the path to their solution. Rather than designing and implementing interventions which fail to take account of the dynamics underlying complex behaviors, it might be advisable to **study certain behavioral problems in a more circumscribed and intensive way than was attempted in the FAs**. These mini-studies might appropriately use research techniques suited to the study of behavioral dynamics; focus groups, in-depth interviews, observational research, and opinion surveys.

The goal of each study will be to identify the relative importance of factors which contribute to a specific problem, and to suggest which factors are most likely to be changed by interventions of the type the HSFP-PC can mount. When based on insights from this behavioral research, communications and training interventions are likely to be more appropriately structured, and the content of their persuasive messages more appealing and influential for the audiences to which they are directed.

2. The Process of Formulating and Testing Interventions

The process by which interventions will be identified, designed, implemented, and evaluated needs to be carefully structured and clearly described. The Consensus Group process has shown potential for success at involving key staff of the various directorates in decisions about the shape and direction of HSFP-PC activities. Members are able to comment on work in progress from the perspective of their own organization and responsibility.

However, this type of forum may not be the most productive for assimilating and distilling large amounts of complex data, or "brainstorming" about productive strategies for intervention.

One approach might be to **provide the Consensus Group with a staff capacity**. Staff might be charged with developing issues papers and presentations on specific integrative topics such as diarrheal disease and its treatment, managerial training programs, or the role of information systems in drug supply and use. These papers could help to organize the problems in these areas identified by the FAs, and put forth initial recommendations for types and scope of interventions to address them.

The role of Activity Coordinators after the completion of the FAs has yet to be determined. Assigning **one Activity Coordinator from each directorate to participate on this staff** would ensure that the separate points of view of the directorates would be well-represented during the formulation of interventions. The staff process could be coordinated by the Long-Term Consultant; one of his roles would be to maintain the involvement of provincial administration in the analysis of data and the development of intervention activities. Optionally, it might be possible to assign an Activity Coordinator in each of the intervention provinces as well, both to manage the local activities of the HSFP-PC, but also to participate in this Consensus Group staff process.

V. ADDITIONAL STUDIES AND FUTURE TECHNICAL ASSISTANCE NEEDS

A. Additional Important Study Areas Not Addressed by the FAs

- **The use of drugs in prenatal, post-natal, and well-child visits:** It was indicated in CSP-1 that these visits account for about half of visits to Puskesmas, yet there are few data on how drugs are used during these visits for preventive care. Since immunizations and nutrition supplements are primary child survival technologies to be promoted by the HSFP-PC, a study of the content of these visits and of opportunities for more effective pharmaceutical use is a high priority.
- **EPI and the supply of vaccines:** The immunizable diseases are major sources of morbidity and mortality among children under five, and the EPI program is the principle public sector sources of the vaccines to prevent them. A special study of the organization and functioning of this supply channel, and its relationship to other sources of drugs, would be an important complement to the previous analysis of well-child and maternal care in Puskesmas.
- **Behavioral research to support the marketing and promotion of the generic drug scheme:** The MOH has promulgated a major policy requiring that generic drugs account for 50 percent of APBD expenditures in all rumah sakit and Puskesmas by April, 1990. Supporting targeted research on the barriers to acceptance of generic drugs by prescribers and the public, and assistance in the development of marketing strategies, would contribute to the success of this major initiative.
- **Supply and use of pharmaceuticals at levels of the health system below the Puskesmas:** The FAs did not gather much information about the most peripheral and community-based levels of the health system - Puskesmas pembantu, pos yandu, pos oralit, or kaders. Little is known about the quantity of public sector drugs dispensed at this level, the quality of prescribing, or the clinical impact of the products. In order to complete the picture of the drug distribution system, and identify potential areas for cost-effective interventions, a quantitative and qualitative study is indicated.
- **The role of type "A" and "B" rumah sakit:** Because of their positions as teaching institutions, the type "A" and "B" rumah sakit could present major opportunities for training interventions to improve drug use. Patterns of drug use, and the way in which the essential drug concept and rational therapeutics have been incorporated into their curricula should be examined. In addition, given their status as regional referral centers, the potential for these institutions to contribute to the project as "intervention managers" for their areas should be considered.

- **Factors influencing the overuse of injections and strategies for reducing them:** CSP2 found that one-quarter of all drugs given at Puskesmas were injections, and that two-thirds of under-5s and nearly all adults receive an injection during their visit to the Puskesmas. Nondoctors were far more likely to prescribe injections than doctors. The reasons for this overuse of expensive and dangerous products need to be explored from the point of view of both the provider and the patient. Based on this behavioral analysis, promising strategies for reducing injection use must be identified and tested.

B. Potential Areas for Technical Assistance in the Next Year

- **Document synthesis, preparation of issue papers, and facilitation of intervention design**
 - Synthesize the abstracted literature and review and summarize findings of the secondary data sources to highlight their relevance to the ADSPP-PC.
 - Work with the FA implementors to integrate their results with the findings in this synthesis.
 - Prepare issue papers in key content areas for use by the Project Implementation Office and the Consensus Group in the formulation of interventions.
 - Facilitate the process of formulating specific interventions based on results presented in the issue papers.
- **Review of DepKes policies related to pharmaceuticals**
 - Review the pharmaceutical policies of the different directorates at DepKes which are concerned with the supply or use of drugs: POM, BinKesMas, Yanmedik, P2M and the special programs.
 - Identify specific ways that the HSFP-PC can contribute to the policy objectives of Repilita V.
 - Develop a plan for integration of the activities and findings of the HSFP-PC into the policy-making process, and into the drafting of Repilita VI.

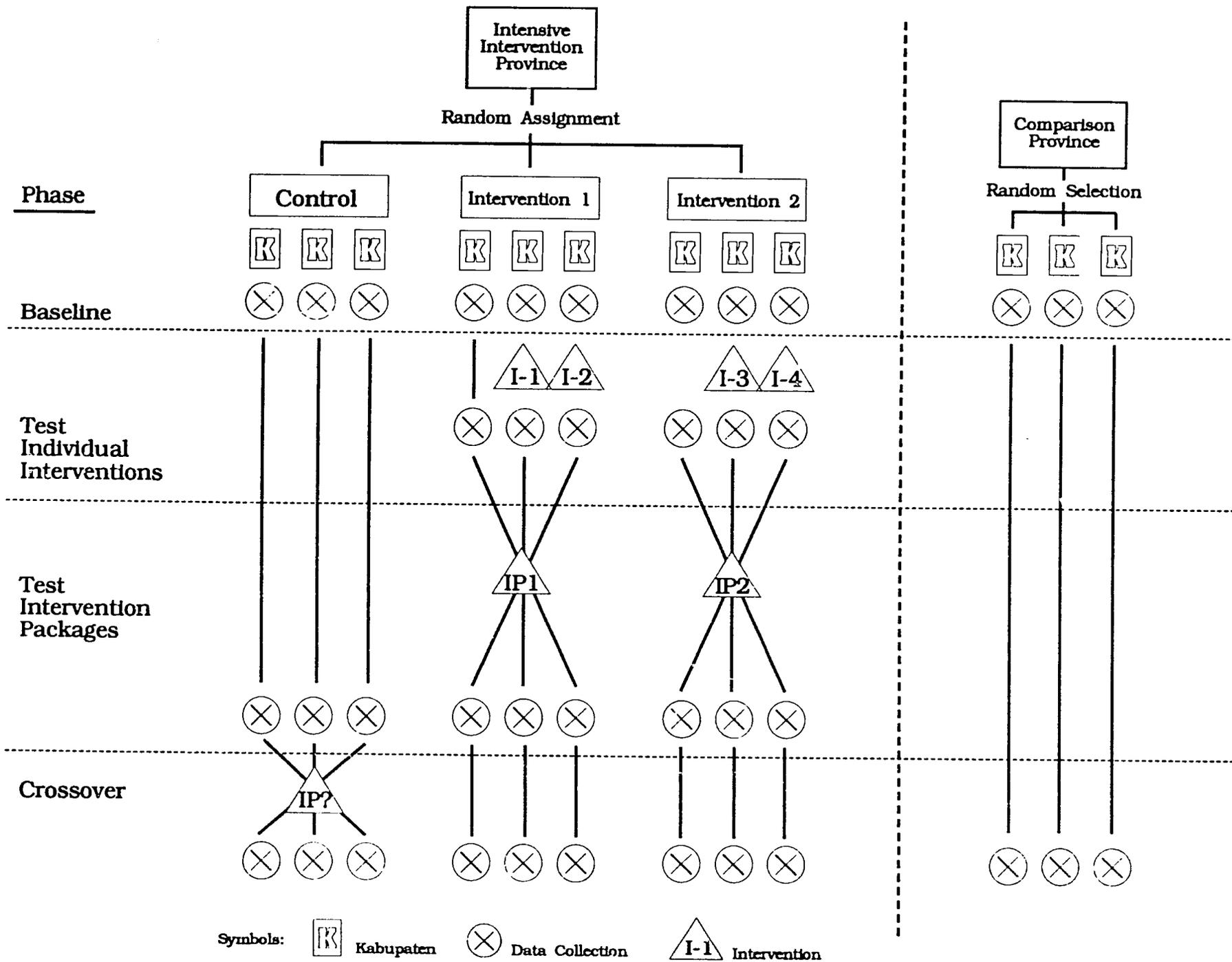
- **Feasibility for effective use of computers in provincial and kabupaten offices, and at the GFK**
 - Assess the experience of the introduction of computers and use of the DEM at GFKs in West Sumatra during the CHIPPS Project.
 - Identify the opportunities for expanded use of computers for the planning and procurement of drugs at the provincial and kabupaten levels.
 - Investigate the potential for creating a simplified system which could satisfy both the HSFP-PC's need for period processing of evaluation data with the routine drug management information needs at the provincial level.

- **Assistance in design of community-based educational interventions**
 - Assess the provincial infrastructure and capability for implementing innovative group or individual face-to-face prescribing behavior change interventions.
 - Based on the findings of the DUS and targeted behavioral studies, identify several target behaviors to be "detailed" in face-to-face encounters.
 - Assist in the development of scientifically-based persuasive print materials to be used in conjunction with the face-to-face interventions.
 - Assist in design of a plan for pilot testing face-to-face educational interventions, including development of an evaluation strategy.

- **Assistance in design of rumah sakit-based prescribing interventions**
 - Assess the capacity of "A" and "B" rumah sakit to undertake prescribing audits like those implemented at Soetomo Hospital.
 - Based on the results of the DUS, identify several high-cost inpatient drug use practices with little therapeutic justification.
 - Identify promising strategies for reducing these high-cost practices, such as feedback of prescribing practice to providers, adoption of guided drug order forms, clinical pharmacy services, or face-to-face educational programs.
 - Assist in the design of pilot intervention programs at several rumah sakit, including a plan for their evaluation.

- **Microeconomic analysis of pharmaceuticals in the public sector**
 - Organize what is known about total personal expenditures for pharmaceuticals, and the role of private sector patterns of use and expenditure.
 - Assess the role of patient fees and drug charges as influences on the volume and pattern of drug use in public sector facilities.
 - Examine the current magnitude and the potential for revolving drug funds and Koperasi as a means of increasing access to pharmaceuticals.
- **Examine the Feasibility of an Integrated Diarrheal Disease Intervention Based on the Use of ORS MAP as a Routine MIS Tool**
 - Supervise and assess the field implementation of the completed ORS MAP diarrheal disease supply management and prescribing analysis tool.
 - Examine the capacity to collect ORS supply and use data in either an ad hoc or routine manner at the outlets in the health delivery system below the PusKesMas.
 - Determine training needs and necessary data flows to implement ORS MAP as a routine diarrheal disease management information system at the province level.
 - Assist in the planning of pilot interventions to improve diarrheal disease prescribing and supply management based on the results of the FAs and available ORS MAP outputs.

Figure 1: Randomized Crossover Evaluation Scheme for HSFP-PC



TABLES

TABLE 1
POSSIBLE INTERVENTION BY LEVEL OF THE DRUG USE SYSTEM

PUSAT -- Policy, Planning, Procurement

- Development of National Drug Management and Information System
 - Implement systems for closer procurement and delivery monitoring to provinces and kabupaten
 - Improved coordination among various units with responsibility for funding or procuring drugs
 - Revision of National Essential Drug List (DOEN) and Information on Essential Drugs (IOEN)
 - Introduce regulations for variable pricing of health encounter and drugs according to public health impact
 - Introducing more effective manpower policies, job requirements, and job descriptions to improve motivation and job satisfaction
-

PROVINCE -- Policy, Planning, Procurement

- Training for the Drug Management Working Group in strategies for more cost-effective procurement
 - Improved coordination among various units with responsibility for funding or procuring drugs
 - Creation of computerized drug information systems to track both drug supply and utilization by kabupaten on an institutional and per capita basis
 - Training of supply system managers in alternative techniques for needs quantification
 - Introducing more effective manpower policies, job requirements, and job descriptions to improve motivation and job satisfaction
-

KABUPATEN -- Planning, Procurement, Distribution, Supervision

- Training for the Drug Management Working Group in strategies for more cost-effective drug procurement
- Training of GFK pharmacists in techniques of needs quantification
- Regular cost-effectiveness review of drug orders received from rumah sakit and puskesmas, and training for management feedback to decision-makers
- Improvements in storage facilities, inventory management, security, and the administration of quality control programs at the GFK
- Creation of computerized drug information systems to track both drug supply and utilization by rumah sakit and Puskesmas on an institutional and per capita basis

TABLE 1
POSSIBLE INTERVENTION BY LEVEL OF THE DRUG USE SYSTEM
(CONTINUED)

RUMAH SAKIT -- Planning, Management, Use

Interventions to improve drug management

- Creation of Formulary and Therapeutics Committees and development of institutional or service-specific formularies
- Train rumah sakit pharmacists in techniques of pharmacy planning and stock management
- Cost-effectiveness review of drug orders on the kabupaten level, with management feedback to pharmacists and hospital directors
- Introduce drug procurement forms structured to encourage cost-effective ordering by therapeutic class
- Improvements in storage facilities, stock management, and the administration of quality control programs

Interventions to improve drug prescribing

- Implement and train for standard diagnostic and treatment guidelines
- Introduce drug prescription forms and medical records structured to encourage correct practice
- Audits of prescribing patterns on a service-specific or individual basis with educational "feedback" to providers
- Require consultations or justifications for using certain expensive or dangerous drugs
- Restrict prescribing of certain drugs to particular types of provider or particular services
- Implement automatic stop orders after a certain length of therapy for certain expensive drugs
- Require prescribing of generic drugs
- Restrict number of drugs per visit (perhaps to 3 with certain types of essential drugs exempted)
- Improved quality and distribution of printed material for prescribers like:
 - newsletters for prescribers
 - formulary and therapeutics manuals
 - targeted educational materials (fliers, leaflets, posters on specific issues)
- Public Health "detailing" of prescribers

TABLE 1
POSSIBLE INTERVENTION BY LEVEL OF THE DRUG USE SYSTEM
(CONTINUED)

Interventions to improve dispensing

- Introduce course-of-therapy packaging
 - More effective (e.g. symbolic or color-coded) package and container labeling
 - Changing limits on quantities dispensed (eliminating "3 day rule")
-

PUSKESMAS -- Planning, Management, Distribution, Use

Interventions to improve drug management

- Cost-effectiveness review of drug orders at the kabupaten level, with management feedback to head of PusKesMas
- Improvements in physical conditions and security at storage and dispensing facilities
- Training in pharmacy stock management and quality control for dispensers
- Improve system for transportation of drugs from GFK and to PusKesMas pembantu and other dispensing points

Interventions to improve drug prescribing

- Implement and train for standard diagnostic and treatment guidelines
- Introduce drug prescription forms structured to encourage correct practice, for example, ones which contain space for the prescribing of three drugs only
- Audits of prescribing patterns at the facility and individual level plus "feedback" to providers
- Implement more effective systems of clinical consultation and supervision for providers
- Restrict prescribing of certain expensive or dangerous drugs to particular types of provider
- Require prescribing of generic drugs
- Restrict number of drugs per visit (perhaps with certain types of essential drugs exempted)
- Improved quality and distribution of printed material for prescribers like:
 - newsletters for prescribers
 - formulary and therapeutics manuals
 - targeted educational materials (fliers, leaflets, posters on specific issues)
- Public Health "detailing" of PusKesMas doctors

**TABLE 1
POSSIBLE INTERVENTION BY LEVEL OF THE DRUG USE SYSTEM
(CONTINUED)**

Interventions to improve dispensing

- Introduce course-of-therapy packaging
 - More effective (e.g., symbolic or color-coded) package and container labeling
 - Changing limits on quantities dispensed (eliminating "3 day rule")
-

HEALTH DELIVERY POINTS BELOW PUSKESMAS - Management, Use

- Development of basic systems for drug planning, transportation, and stock management for PusKesMas pembantu, pos yandu, pos oralit, and kaders
 - Training in simplified structured protocols for diagnosis, referral and treatment of diarrheal disease, ARI, and other key child survival problems
 - Implementing systems for keeping more reliable basic vital statistics and immunization records
-

COMMUNITY - Use

- Public education about particular health problems and drugs through the media (television, newspapers, radio)
- Intensive campaigns to market certain concepts, like the efficacy and acceptability of generic drugs
- Training of health workers to improve public education at the point of prescribing and dispensing
- Use of marketing techniques to promote proper use, such as more attractive packaging for generic drugs
- Explore variations in price level for health services, differential pricing for essential drugs

TABLE 2
EXAMPLES OF INTERVENTION OUTCOMES AND MEASUREMENT TECHNIQUES

CATEGORY OF OUTCOME CHANGED	EXAMPLE OF OUTCOME MEASURE	MEASUREMENT TECHNIQUE
Knowledge		
<ul style="list-style-type: none"> • provider knowledge about disease and therapeutics • supply manager knowledge about planning techniques • patient knowledge about disease and drugs 	<ul style="list-style-type: none"> • % knowing protocol for diagnosis and treatment of ARI • % able to list top 3 therapeutic classes and top 10 drugs in expenditure volume for previous year • % mentioning ORS as treatment for diarrhea 	<ul style="list-style-type: none"> • interviews with prescribers • questionnaire to GFK managers • interviews with mothers presenting for treatment of diarrhea at Puskesmas
Attitudes		
<ul style="list-style-type: none"> • job satisfaction • patient or provider expectations • patient-provider communication 	<ul style="list-style-type: none"> • yearly staff turnover rate • rank order summary of perceived problems during health encounter • % of patients who can correctly repeat their proper drug regimen 	<ul style="list-style-type: none"> • routine personnel data • focus groups • interviews with patients at rumah sakit and Puskesmas
Drug-Use Behavior		
<ul style="list-style-type: none"> • use of correct drug • use of correct dosing and duration of treatment • dispensing practices • patient compliance 	<ul style="list-style-type: none"> • % of cases of diarrhea treated with ORS • % of antibiotic courses of therapy with correct dosing and duration • % of prescriptions put in proper container • % of children fully vaccinated 	<ul style="list-style-type: none"> • retrospective survey of patient registers or prescription forms • retrospective survey of patient registers or prescription forms • observational survey in facility pharmacy • health records at health facility

TABLE 2
EXAMPLES OF INTERVENTION OUTCOMES AND MEASUREMENT TECHNIQUES
(CONTINUED)

<u>CATEGORY OF OUTCOME CHANGED</u>	<u>EXAMPLE OF OUTCOME MEASURE</u>	<u>MEASUREMENT TECHNIQUE</u>
Drug Management Behavior		
<ul style="list-style-type: none"> • economic efficiency • stock control and record keeping • quality assurance 	<ul style="list-style-type: none"> • cost per defined daily dose of antibiotics ordered • complete and up-to-date stock tickets • % of out-of date products in pharmacy 	<ul style="list-style-type: none"> • survey of order quantities • observational survey at GFK • audit of products at health facility
Clinical Outcomes		
<ul style="list-style-type: none"> • mortality • duration of illness • severity of illness • adverse drug effects 	<ul style="list-style-type: none"> • neonatal tetanus mortality rate • total days of diarrhea per episode • admission rate for severe dehydration • % of organisms resistant to common antibiotics 	<ul style="list-style-type: none"> • community epidemiology monitoring system • community interview survey • hospital medical record audit • microbiological survey at teaching hospital

ANNEX 1:

STATUS REPORT
OF MANPOWER STUDY
AS OF JULY 4, 1989

STATUS REPORT
HSPF-P
MANPOWER STUDY AS OF JULY 4, 1989

T.O.R. REQUIREMENTS
HASIL YANG DIHARAPKAN

DATA/INFO

STATUS

I. Existing Manpower Data & Facts:

1.1 Number of Drug Management Power
(Jumlah Tenaga Kerja Pengelola Obat)

1.1.1 Personnel Data in:

- PusKesMas
- Pharmacy Installation Hospital
- GKF
- Kantor Departemen Seksi Bim.Dal. POM
- Team Pengelola/Perencanaan Obat Tk.II
- Head of Dinas II
- Staff Dinas II in Drug Management Working Group
- KPC PHB (District Branch PHB)
- Balai POM
- Bidang POM, Kanwil
- "Team Perencana Obat" & "Tim Pengadaan Obat" (Working Groups) Provincial
- Subbag Perlengkapan (T.U Dinas I) - related to Drug Procurement
- PHB Branch

All under Staff 1.1.1
 ■ Data Collected & Processed
 ■ Tables in Process

1.1.2 Descriptive Reports on organization process, pharmacy manpower identification in the six provinces

Already written; being edited

T.O.R. REQUIREMENTS HASIL YANG DIHARAPKAN	DATA/INFO	STATUS
1.2 The Actual Position Prerequisites (Persyaratan Jabatan yang Berlaku)	1.2.1 Actual Tax & Functions of 1.1 (above)	Data Collected
Analyzed	1.2.2 National & Local Standard Functions and Tasks in: GFK: <ul style="list-style-type: none"> ■ Instalasi Farmasi ■ PusKesMas ■ Balai POM ■ Bidang POM (Kanwil) 	Data Collected & Being
	1.2.3 National Standard for Qualifications for 1.2.2	Under Investigation
	1.2.4 Organization Charts for All Units	Data Collected
	<u>For Respondents only</u>	
1.3 Qualifications and Skills for Manpower (Kwalifikasi dan Ketrampilan Tenaga)	1.3.1 Level of Education process	Data Collected; tabled in
	1.3.2 Type of Number of Training Taken process	Data Collected; tabled in
	1.3.3 Years of Experience in Current and Previous Position for Respondents	Data Collected
	1.3.4 Source of Information for Improving Pharmaceutical Knowledge	Data Collected

T.O.R. REQUIREMENTS HASIL YANG DIHARAPKAN	DATA/INFO	STATUS
1.4 Job Prerequisite and Working Milieu (Syarat-syarat dan Lingkungan Kerja)	1.4.1 Physical Facilities Equipments in GFK, PusKesMas, Hospital Pharmacy Unit	
	1.4.2 National Physical Facility Standards for:	
	<ul style="list-style-type: none"> ■ PusKesMas ■ Hospital Pharmacy Installation ■ GFK 	Data Collected Data Collected
	1.4.3 Housing of Respondents	Data Collected
	1.4.4 Transport and Facility for Respondents	Data Collected
	1.4.5 Working in Private (outside office hours) for Pharmacist Assis- tants and Pharmacist (Respondents)	Data Collected
	1.4.6 Motivation to Work in Pharmaceu- tical Sector for Pharmacist, Pharmacist Assistant	Data Collected
1.5 Actual Job Description (Uraian Jabatan yang Berlaku)	1.5.1 Respondent Response on their Task and Activities	Data Collected
	1.5.2 Respondent Response on Reporting Line	Data Collected
	1.5.3 Respondent Response on Reports Produced	Data Collected
	1.5.4 Time Allocation for Certain Positions PusKesMas, GFK, Instalasi Farmasi	Data Collected

**T.O.R. REQUIREMENTS
HASIL YANG DIHARAPKAN**

DATA/INFO

STATUS

T.O.R. REQUIREMENTS HASIL YANG DIHARAPKAN	DATA/INFO	STATUS
	1.5.5 Written Job Description from Drug Management Working Committees	Data Collected
	1.5.6 Written Job Descriptions for some PusKesMas, GFK, Pharmacy Units Hospital	Data Collected
	1.5.7 Availability of Written Job Description of Each Unit	Table in Process
	1.5.8 <u>Secondary Data:</u>	Collected and Studied
	<ul style="list-style-type: none"> ■ National Guide Book on the Management of Hospital Pharmacy Installation (Buku Pedoman Pengelolaan Instalasi Farmasi R.S.) ■ National Guide Book GFK (Buku Panduan GFK) ■ National Guide Book on PusKesMas (Buku Pedoman PusKesMas) 	
1.6 Program and Activity of Manpower Development in Drug Management (Kegiatan dan Program Pengembangan Ketenagaan Dalam Pengelolaan Obat)	1.6.1 Training Program Participated by Respondents	Data Collected
	1.6.2 Training Program in Some Provinces	Data Collected
	1.6.3 Pharmacy Assistant Curricula	Collected and Studied
	1.6.4 Draft on National Educational Program for Health Manpower 1989/1990 - 1993/1994 (Repelita V, Program Pendidikan Tenaga Kesehatan 1989/1990 - 1993-1994)	Collected and Studied
	1.6.5 Syllabus and Curricula of Trainings in Health Department	On Request to Secondary Data Study

T.O.R. REQUIREMENTS HASIL YANG DIHARAPKAN	DATA/INFO	STATUS
<p>II. information on constraints and problems in implementing function and tasks by the manpower in the entire chains of drug management and drug uses in each work unit (Informasi mengenai kendala dan masalah dalam pelaksanaan fungsi dan tugas tenaga kerja dalam seluruh rangkaian pengelolaan and penggunaan obat di masing-masing unit)</p>	<p>2.1 Respondents Response on Constraints and Problems Faced in Their Work</p> <p>2.2 Analysis of Relationship between constraints problems with organizational aspects, education and training received and working facilities</p>	<p>Collected and Short Listed</p> <p>In Process (in writing)</p>
<p>III. Recommendations for effective, efficient and applicable intervention to improve manpower pattern in the entire chains of drug management and drug uses which covers: (Rekomendasi intervensi yang efektif, efisien dan aplikable untuk penyempurnaan pola kementerian dalam seluruh rangkaian pengelolaan dan penggunaan obat yang mencakup).</p>		
<p>3.1 Number of manpower in drug management which responds to the needs (Jumlah tenaga kerja pengelola obat sesuai dengan kebutuhan)</p>	<p>3.1.1 Analysis of Job Description of Each Position</p> <p>3.1.2 Actual Tasks and Activities as Responses by Respondents</p> <p>3.1.3 Analysis in Work Loads</p> <p>3.1.4 ISN Materials</p>	<p>In Process (in writing)</p> <p>Data Collected</p> <p>In Process (in writing)</p> <p>Collected and Studied</p>
<p>3.2 Prerequisite for position based on technical determinants (Persyaratan jabatan menurut ketentuanteknis setiap jabatan)</p>	<p>3.2.1 Tasks and Functions Written and Unwritten (Responde from Respondents)</p>	<p>Collected, Listed</p>

T.O.R. REQUIREMENTS HASIL YANG DIHARAPKAN	DATA/INFO	STATUS
3.3 Manpower qualifications and skills corresponding to position requirements (Kwalifikasi dan ketrampilan tenaga kerja yang sesuai persyaratan jabatan)	3.3.1 Current Level of Education, Training Exposure of Respondents	Collected, Tables Made
	3.3.2 National Standard of Qualifications for Positions in Drug Management	Under Investigation (partially collected)
3.4 Prerequisites for working millieu and conducive working millieu (Syarat-syarat dan lingkutan kerja yang conducive)	3.4.1 Information from Observation of Working Place of Units Visited	Collected
	3.4.2 Data on Equipment Used, Availability and	Collected
	3.4.3 National Standard for Working (Physical) Facilities for Each Unit	Under investigations (PusKesMas, Hospital collected)
3.5 Effective job description (Uraian jabatan yang efektif)	3.5.1 Written tasks & Functions Existing GFK, PusKesMas, Hospital Pharmacy Unit, Kanwil Working Groups	Collected & Analyzed in
IV. Recommendations for manpower development planning and program in drug management to respond to needs (Rekomendasi mengenai rencana dan program pengembangan ketenagaan dalam pengelolaan obat sesuai kebutuhan)	4.1 Existing Plans & Program Source: "Kebijaksanaan Obat National" (National Drug Policy 1983) "National Health System" (Ministry of Health, R.I., 1982) Repelita V Program Pendidikan Tenaga Kesehatan 1989/1990 - 1993/1994 (5 Tahun) (Five Year Plan - Health Manpower Educational Program) Ministry of Health, 1989	Reviewed

T.O.R. REQUIREMENTS HASIL YANG DIHARAPKAN	DATA/INFO	STATUS
	4.2 Comparative source:	Reviewed
	"Balance & Imbalance in Pharmacy Manpower"	
	In Health Manpower Out of Balance, Conflicts & Prospects (CIOMS, 1982)	
	Training Programs Participated by Respondents	Data Collected & Listed per Respondents
	Training Desired by Respondents	Data Collected Listed for recommendations: a. Pre-Service training for drug management personnels in GFK, Pharmacy Unit, Hospital and GKF b. Assigning new educational and informational Role & Function to Balai POM c. Improving guidelines for operational staff d. Recommendations for working facilities e. Utilization of professional organizations & their publications for improving manpower knowledge in pharmacy

ANNEX 2:
DETAILS OF SAMPLE SIZE AND ANALYSIS
FOR DRUG USE STUDY

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STATISTICS ON WHICH SAMPLE CALCULATIONS ARE BASED

Under-5s as percent of all cases	23.7%	(CSP-1)
Total under-5 cases (million)	3.87%	(CSP-1)
Diarrhea	15.5%	(CSP-1)
ARI	36.4%	(CSP-1)
Proportion seen by MD's	30.0%	(CSP-2)

ESTIMATED NUMBER OF UNDER-5 CASES IN SAMPLE

Sample size per PusKesMas	200	250	300	350	400
Total cases for 18 PusKesMas	3600	4500	5400	6300	7200
Under 5s, old sample method (23.7%)	852	1065	1278	1491	1704
Under 5s, new sample method (38.3%)	1379	1724	2068	2413	2758
Seen by MD's (30%)	414	517	620	724	827
Seen by non-MD's (70%)	965	1206	1448	1689	1930
With diarrhea (15.5%)	214	267	321	374	428
Seen by MD's (30%)	64	80	96	112	128
Seen by non-MD's (70%)	150	187	224	262	299
With ARI (36.4%)	502	628	754	879	1005
Seen by MD's (30%)	151	188	226	264	301
Seen by non-MD's (70%)	352	440	527	615	703

**HYPOTHETICAL EXAMPLES OF THE EFFECTS OF SAMPLE SIZE ON
CONFIDENCE INTERVALS AROUND SAMPLE PROPORTIONS**

Sample estimate of children under 5 receiving 4 or more drugs = 32

Upper limit of TRUE %	29.6%	29.8%	30.0%	30.1%	30.3%
Lower limit of TRUE %	34.5%	34.3%	34.1%	33.9%	33.8%

Sample estimate of diarrhea cases treated with ORS = 20%

Upper limit of TRUE %	15.0%	15.5%	15.8%	16.1%	16.4%
Lower limit of TRUE %	26.1%	25.4%	24.9%	24.5%	24.2%

Sample estimate of ARI cases treated with antibiotics = 78%

Upper limit of TRUE %	74.1%	74.5%	74.8%	75.1%	75.3%
Lower limit of TRUE %	81.5%	81.1%	80.9%	80.7%	80.5%

**ANNEX 2:
DETAILS OF SAMPLE SIZE AND ANALYSIS FOR DRUG USE STUDY**

SAMPLING RULES

1. Proceed through register or pile of cases recording information for every child under five, but recording information only for every other person five and over.
2. If the date on the day when the cases are being recorded is an odd number, record only the odd five and over cases (one, three, five...); otherwise record only even (two, four, six...) cases.
3. Continue to record cases in this way until 250 cases are recorded in total.

WEIGHTED STATISTICAL ANALYSIS OF A STRATIFIED SAMPLE

	Sampling Fraction	Total in Sample	Weight in combined analysis
Under-fives	1/1	N_{115}	$((N_{115} + N_{ge5}) / ((2 * N_{ge5}) + N_{115}))$
Five and over	1/2	N_{ge5}	$2 * ((N_{115} + N_{ge5}) / ((2 * N_{ge5}) + N_{115}))$

For example, suppose that after applying the above rules for drawing a sample, 385 cases of children under five and 615 cases of five-and-overs were recorded:

Number of under-five cases (= N_{115})	385
Number of five-and-over cases (= N_{ge5})	615

Total sample = $N_{115} + N_{ge5}$ 1000

Weight for under-fives = $((1000)/((2 * 615) + 385)) = 0.619$

Weight for five-and-overs = $2 * ((1000)/((2 * 615) + 385)) = 1.238$

Total weight sample = $(0.619 * 385) + (1.238 * 615) = 1000$

ANNEX 3:
DRAFT OBSERVATIONAL INSTRUMENTS
FOR THE DRUG USE STUDY
DISPENSER-PATIENT INTERACTION

ANNEX 3
DRAFT OBSERVATIONAL INSTRUMENTS FOR THE DRUG USE STUDY

PRESCRIBER-PATIENT INTERACTION
DISPENSER-PATIENT INTERACTION

The following are draft outlines of protocols for observation of the prescribing and dispensing processes. Some information may need to be filled in at the end of the visit or end of the day from the patient record.

The actual observation recording sheet should be organized for observation efficiency. Consideration should be given to use of English, or of abbreviations, to minimize the extent to which prescribers and dispensers are threatened by the observations.

The forms are arranged as checklists for recording of specific information. The observations are done to assess the **process of care** and not the actual outcome. The actual content of information given, or the accuracy of physical and laboratory findings, are **not** recorded, but simply information on whether the topic was addressed in some manner.

For recording convenience and because diagnosis will not be known at the beginning of a patient visit, the forms are organized primarily by type of information, not by disease category. Observations relevant to specific diseases will be analyzed separately.

The observation checklist should be reviewed **informally** with diarrheal disease and ARI staff from CDC to assure that it is consistent with their policy with regard to diagnosis of diarrheal diseases and ARI. However, incorporation of their comments should take into consideration the fact that these programs as concerned primarily with under-fives, and not the majority of patients who will be seen with diarrheal disease and ARI will be adults.

The observations will be made for new patients only.

Whether or not sterile injection technique is used should be observed at each health facility if logistically feasible, and included on the prescriber or dispenser observation as appropriate.

ANNEX 3
 DRAFT OBSERVATIONAL INSTRUMENTS FOR THE DRUG USE STUDY
 PRESCRIBER-PATIENT INTERACTION

IDENTIFYING INFORMATION

Patient Name: _____ Patient Age (years): _____
 Date: _____ Time of Visit: Start: _____ End: _____
 Location Number: _____ Prescriber Type: (1 = MD, 0 = non-MD): _____

DIAGNOSTIC COMMUNICATION

	Prescriber Asked	Patient Volunteers	Not Discussed
<u>General</u>			
Length of Illness	—	—	—
Previous Treatment for Illness	—	—	—
Fever present/how long	—	—	—
<u>Diarrheal Disease</u>			
Diarrheal frequency/volume	—	—	—
Association of onset with food eaten	—	—	—
Presence of blood in stool	—	—	—
<u>Acute Respiratory Disease</u>			
Localizing symptom (earache, congestion, etc.)	—	—	—
Cough characteristics (productive, etc.)	—	—	—
Exposures (TB, others ill)	—	—	—

THERAPEUTIC COMMUNICATION/
 ADVICE GIVEN

	Prescriber Initiated	Patient Initiated	Not Discussed
Specific drugs desired by patient	—	—	—
Injection desired by patient	—	—	—
Diagnosis stated	—	—	—
Mention drugs prescribed by name or type	—	—	—
Discuss proper use of drugs prescribed	—	—	—
Eating/feeding/breast feeding advice	—	—	—
Use of traditional medicine*	—	—	—

PHYSICAL EXAMINATION

	Examined	No Exam	Unknown
Temperature	—	—	—
Respiratory rate	—	—	—
Otosopic exam (ear)	—	—	—
Throat exam	—	—	—
Listen to lungs (stethoscope)	—	—	—
Palpate (feel) abdomen	—	—	—

LABORATORY EXAMINATION

	Examined	No Exam	Unknown
Gross observation of stool	—	—	—
Microscopic exam of stool	—	—	—
Stool culture sent	—	—	—
Throat (strep) culture	—	—	—
Chest x-ray	—	—	—

OUTCOME (From patient record)

Diagnosis:

1. _____
2. _____
3. _____

Drug Prescribed

Amount

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

**ANNEX 3:
DRAFT OBSERVATIONAL INSTRUMENTS FOR THE DRUG USE STUDY
DISPENSER-PATIENT INTERACTION**

IDENTIFYING INFORMATION

Patient Name: _____ Patient Age: _____
Date: _____ Dispenser Type (1-Pharm/2= Asst. Pharm/3= Other): _____

PATIENT-DISPENSER COMMUNICATION

	Dispenser Initiated	Patient Initiated	Not Discussed
Diagnosis discussed	—	—	—
Description of drugs dispensed (name,type of drug, purpose)	—	—	—
Proper dosage interval/frequency	—	—	—
Cautions, side effects mentioned	—	—	—
Allergies to drugs	—	—	—
Take with food/on empty stomach	—	—	—
Advice on OTC drugs	—	—	—
Use of traditional medicine	—	—	—

DISPENSER ACTIONS

Injections--sterile technique Yes ___ No ___

Drug Prescribed	Drug Code	Quant. Prescr.	In Stock Quant. (Y/N) Dispen.	Charge for Drug Type of (if any) pkg
1. _____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____
7. _____	_____	_____	_____	_____
8. _____	_____	_____	_____	_____
9. _____	_____	_____	_____	_____
10. _____	_____	_____	_____	_____

Package Type (Check one or more):

None	_____	Plastic bottle	_____
Folded Paper	_____	Glass bottle	_____
Plastic Bag	_____	Other	_____

Drugs Labeled (Y/N): ___ If yes, includes: Patient Name (Y/N): _____
Drug Name (Y/N): _____
Frequency of Use (Y/N): _____