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Health Sector Financing Project
Ministry of Health
Republic of Indonesia

**INTEGRATED ANALYSIS
OF FOCUSED PROBLEM ASSESSMENTS
ON DRUG MANAGEMENT AND USE
AND DESIGN OF INTERVENTIONS**

Report No. 42

December 1990



International Science and Technology Institute, Inc.
1129 Twentieth Street, NW ■ Suite 800 ■ Washington, DC 20036
Telephone: 202-785-0831 ■ Fax: 202-223-3865 ■ Telex: 272785 ISTI UR

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Prepared by:
Dr. Andayaningsih
Drs. Yos Hudyono
Dr. Widyastuti Soerojo
Dr. Linda Sitanggang
Ms. Jennifer Zeitlin
Dr. Reginald Gipson

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ABBREVIATIONS, ACRONYMS AND TERMS

ABC	Classifications of Drugs based on consumption
APBD	Province and Kabupaten budget funds
APBN	Central-level program funds used at province level
ARI	Acute respiratory infection
BinKesMas	Pembinaan Kesehatan Masyarakat (Community Health Services)
CCS	Center for Child Survival
CDD	Program for Control of Diarrheal Disease
CSP1, CSP2	Child Survival Pharmaceutical Studies 1 and 2
DDD	Defined daily dose, an arbitrary standardized unit useful for cost-effectiveness analysis
DEM	Drug Estimation Model computer program
Dinas	Regional administrative level in the Ministry of the Interior
Dinkes TK.II	Kabupaten-level health department responsible for supervision of the puskesmas
DLFK	Depot Logistik Farmasi Kabupaten
DMP	Drug Manpower Study
DMS	Drug Management Study
DOEN	List of essential drugs
DPI	Design, protocol, and instruments that describe the methodology for a study
DUS	Drug Use Study
EPI	Expanded Program on Immunization
FGD	Focus Group Discussions
GFK	Kabupaten Pharmacy Warehouse
HSFP	Health Sector Financing Project
Inpres	Primary centrally-administered system for public drug supply with allocation on a per- capita basis
ISTI	International Science and Technology Institute
IWG	Integrated Working Group
IWGMS	IWG Medical Services
IWGPS	IWG Pharmaceutical Services
Kabupaten	Used to refer to both urban (Kotamadya) and rural (Kabupaten) regencies
Kandep	Regional administrative office responsible for monitoring adherence to central government policy
KAP	Knowledge, Attitudes and Practices Study
MIS	Management Information System
MOH	Ministry of Health
NDP	National Drug Policy
ORS	Oral Rehydration Salts (Oralit)
P2M-FLP	Pemberantasan Penyakit Menular dan Penyehatan Lingkungan Pemukiman (Communicable Disease Control and Environment)
PHB/Askes	The health insurance fund for public employees
PIO/P	Project Implementation Office, Pharmaceutical Component
PMU	Project Management Unit
POM	Pengawasan Obat dan Makanan (Food and Drug Administration)
Pusat	National level of the health system
Puskesmas	Community Health Center
RSDL	Review of Secondary Data and Literature (Focussed Assessment)
Rumah Sakit	Hospital ("A" and "B" are for referral and teaching)

SRI	Survey Research Indonesia
UPT	Technical Implementing Unit
USAID	United States Agency for International Development
VEN	Vital, Essential, Nonessential classifications of drugs
Yanmedik	Pelayanan Medik (curative services, including hospitals)

EXECUTIVE SUMMARY

A. BACKGROUND

The purpose of the Health Sector Financing Project's (HSFP) Pharmaceutical Component (PIO/P) is to support the Indonesian National Drug Policy by designing interventions that lead to more rational drug planning, selection, procurement, prescription and use. The major planned outputs are reforms in the way pharmaceuticals are ordered, managed, prescribed and distributed, which will result in improved efficiency and more resources available for essential drugs that have an impact on child survival.

The overall strategy is to conduct focus assessments to identify major problems in the above-identified areas and to use the results for the formulation of interventions. The PIO/P has conducted the following four focused assessment studies; and a fifth study on Knowledge, Attitudes and Practices (KAP) is currently being undertaken:

- Drug Management Study (DMS);
- Drug Manpower Study (DMP);
- Review of Secondary Data and Literature (RSDL); and
- Drug Use Study (DUS)

The objectives of the Integrated Analysis are:

- To integrate the results of the focused assessments by summarizing conclusions from each study, linking the major findings, and highlighting relationships between key variables; and
- To formulate an intervention strategy based on this initial analysis, in close collaboration with policy makers in concerned directorates of the Ministry of Health (MOH).

The rationale for the Integrated Analysis is based on the fact that there is a sequential link between the chain of events and activities that are a part of the policy formulation and implementation, management of drugs and delivery of health services. Specifically, the translation of policies that govern the management and use of pharmaceuticals into administrative regulations, standards, guidelines, procedures and technical manuals can be analyzed in reference to the priority problems identified in the focused assessments to determine their relations as causal or contributing factors.

Responsibility for the design of interventions has been assigned to an Integrated Working Group (IWG), consisting of a Pharmaceutical Services component (IWGPS) and a Medical Services component (IWGMS) at both central and regional levels. These working groups, in collaboration with the PIO/P, have identified priority areas for intervention and proposed intervention models as part of this process of combining and consolidating the research phase of the HSFP/P.

B. SUMMARY OF INTEGRATED ANALYSIS OF DRUG USE AND MANAGEMENT

Table 1, Summary Matrix of Integrated Analysis of Drug Use and Management, presents the principal policies, guidelines and procedures governing drug use and management, priority problems identified by

the focused assessments and proposed interventions for each key area. A more detailed matrix, which breaks down these categories further, is included as Annex A.

C. RECOMMENDATIONS FOR INTERVENTION DESIGN

Three principal categories of issues emerged from the integrated analysis. They are:

- Standards of health services provided by Puskesmas and Puskesmas Pembantu, particularly in relation to the formulation, implementation and supervision of medical care and drug use;
- The integrity and effectiveness of the system and organization of drug management, which includes the planning, procurement and dispensing of drugs; and
- Allocation of the budget and integration of the budget sources used for pharmaceutical expenditures.

These issues were explored in relation to major project outputs that are cited in the Project Paper as "drug reforms instituted to increase child survival program impact" and "policies and procedures in place to increase child survival impact of GOI expenditures on drugs." These outputs will be measured by the project's ability to promote rational prescribing, to achieve a more cost-effective allocation of existing resources and to support the shift of resources from curative care to preventive and promotive therapy, particularly for the under-five population.

An integrated drug management model that implements structural and behavioral interventions to improve the way drugs are ordered, procured and distributed has been developed by the IWGPS. The IWGMS has focused on elaborating methods for defining and implementing standard treatment protocols and the supervision of drug use in the Puskesmas and Puskesmas Pembantu. A technical consultant is assisting the IWG in the assessment of the financial drug budget planning, allocation and expenditure system for the design of budget interventions. In accordance with project objectives, these intervention design strategies give priority to problems related to the supply of essential child survival drugs, treatment of acute respiratory infection (ARI) and diarrheal disease with a focus on polypharmacy and the use of antibiotics and injections.

In the next HSFP project phase, pilot interventions derived from these models will be implemented in selected study areas.

Table 1 SUMMARY MATRIX OF INTEGRATED ANALYSIS OF DRUG USE AND MANAGEMENT

Activities	Policies/Procedures/ Guidelines	Implementation & Problem Areas	Proposed Interventions	Pilot Tested
Organization	INSTITUTIONS INVOLVED: Ministry of Internal Affairs (MIA); Ministry of Health (MOH); (Directorates: POM, BKM, YM, CDC) PROVINCE: Governor, Kanwil, Dinkes I KABUPATEN: Dinkes II, Kandep, RS, GFK, Puskesmas, Puskesmas Pembantu	<ul style="list-style-type: none"> - GFK under supervision of Kandep, Puskesmas under Bupati (Dinkes); this represents a major constraint for drug management and effective coordination with the Dinas Kesehatan - No clear supervision for Puskesmas concerning use of drugs (Pemulihan Puskesmas not equipped to supervise) - Policy level clarifications necessary before recommending interventions - PHB has no clear policy on health insurance for Askes members at PKS; can use Inpres when there is a shortage of PHB 	<ul style="list-style-type: none"> - Improve structure lines of communication and coordination: place GFK under Dinkes, give GFK coordinating role - Improve supervising role at Dinkes level in drug use; create supervision structure for drug use at Puskesmas 	<p align="center">+</p> <p align="center">+</p>
	POLICY DIRECTIVES: <ul style="list-style-type: none"> - National Drug Policy Objectives - Decentralization: more authority and initiative to province and district - Generic drug program 	<ul style="list-style-type: none"> - Absence of strategic planning instance at central level for monitoring & evaluating drug programs 	Create mechanism for strategic planning and monitoring at central	<p align="center">-</p> <p align="center">proposed to MOH</p>
Budget	BUDGETARY SOURCES FOR DRUGS: <ul style="list-style-type: none"> - Inpres: determined on a per-capita basis for whole country - APBD I & II: Regional budgets, determined by regional authorities - PHB: Medical insurance for government employees; subscription from salary determination by PHB administration 	<ul style="list-style-type: none"> - Inpres budget is 73%, cost of drugs at the Puskesmas; APED I (3%), II (2%), PHB (17%) - No criteria for establishing local drug budgets; data not available - Inpres per-capita calculations neglect specific community drug needs - Budget planning not integrated - Insufficient data for monitoring global budgetary expenditures 	<ul style="list-style-type: none"> - Develop indicators of need to guide budgetary decisions - Integrate planning activities for all budget sources - Train decision makers in key drug management tools (Kapala Dinas, in particular) - Collect information needed to monitor budgetary expenses 	<p align="center">proposed study</p> <p align="center">+</p> <p align="center">+</p> <p align="center">proposed study</p>

Activities	Policies/Procedures/ Guidelines	Implementation & Problem Areas	Proposed Interventions	Pilot Tested
Manpower	ORGANIZATIONAL STRUCTURE-SK, MOH: - INS (Indicator Staffing Needs) 1985 standardized staffing; needs based on workload - Personnel Management Information System-1989: annual requirements collected by Bureau of Planning	- Overall, number of staff adequate, except at Puskesmas - Detailed job descriptions were not available for most positions - Qualifications inadequate for staff at province, Kabupaten and Puskesmas, especially management qualifications	- Disseminate ISN concept as a guideline for staffing - Improve organizational framework - Develop more effective manpower policies; job descriptions	ongoing + -
	- Dr. & pharmacists need working license from the MOH - Paramedics task depends on training and experience; must work under supervision of MD or pharmacist - PMOH: The Bidan is an exception; can work without supervision of doctor	- A majority of patients are treated by paramedics; 69% at Puskesmas and 99% at Puskesmas Pembantu, on average - Profile of health problems treated by doctors and paramedics is similar, although MDs treated fewer skin diseases & more chronic resp. and hypertension - Doctors occupied by administration; limited supervision of paramedics	- Alleviate administrative burden at Puskesmas on drugs - Improve supervision structure for Paramedics in Puskesmas and Puskesmas Pembantu - Clarify role of Puskesmas Pembantu; define referral structure	+ + + -
	- Training for MDs, pharmacists by MO Education; Paramedics by MOH - Paramedics recruitment is MOH priority in Pelita IV	- Prerequisite training focuses on administration, not education - No structural on-the-job training - Limited access to professional publications, manuals and guidelines - Inadequate long-term planning between needs & manpower development	- Develop evaluation system and career development - Improve on-site training and access to educational materials - Improve long-term planning (INS-87)	- - -
	- BKM GUIDELINES: Drug delivered at Puskesmas by assistant pharmacist or juru obat; capacity to read prescription, dispense & give information	- Inadequate numbers of assistant pharmacists; 52% of Puskesmas had no technical pharmaceutical personnel	- Increase numbers of assistant pharmacists at the Puskesmas	ongoing
Planning	- INMENDAGRI, SKMOH, INPRES No. 6/1984: - Drugs ordered from Drug Lists A, B1, B2 and C - Planning cycle runs from April to March - PHBs: January - December	- Drug lists were followed; however, effective planning impeded by poor coordination of concerned parties, schedules and available data	- Evaluate & improve National Drug Supply Management - Develop Management Information System at Kabupaten level; strengthen role of GFK in drug management process	+ +

Activities	Policies/Procedures/ Guidelines	Implementation & Problem Areas	Proposed Interventions	Pilot Tested
Planning (cont.)	CENTRAL LEVEL: <ul style="list-style-type: none"> - Elaboration of policy directive - Generic Drug Legislation - Recap of List A, B, B2 - Contracting on procurement, pricing 	<ul style="list-style-type: none"> - No strategic planning of drug needs; 1-year planning cycle neglects long-term drug requirements, production needs (raw materials) and distribution - Finalized drug list and finalized budget are not available at same time for decision makers in Kabupaten 	<ul style="list-style-type: none"> - Development of a strategic planning capacity at the central level for drug needs estimation 	-
	PROVINCE LEVEL (DINKES I): <ul style="list-style-type: none"> - INMENDAGRI: Evaluation of pre-plan from Kabupaten; Minimal budget for A, B1 and B2 is 80% of drug requirement - Horizontal Planning on Lists C & APBD drugs 	<ul style="list-style-type: none"> - No established formula for adjustment - Insufficient control and supervision 	<ul style="list-style-type: none"> - Rescheduling planning activities including dissemination of information, frequency and timing - Develop criteria for adjustment 	+ +
	KABUPATEN LEVEL (DINKES II & GFK) <ul style="list-style-type: none"> - INMENDAGRI: Evaluation based on List A, B1, B2 & C, budget estimates, stock of drugs and morbidity pattern - Process begins with data collected at the Puskesmas; compiled at Kabupaten - Estimated needs to Dinkes II end of March - SK, MOH: Procedure - horizontal planning of APBD drugs - POM guidelines: annual planning, technical guidelines in the green book 	<ul style="list-style-type: none"> - Process is poorly coordinated: - Data from Puskesmas often incomplete and ineffectively used - Planning is conducted by an ad hoc project team that changes each year; group does not benefit from experience - Planning for each budget source done by a different team; needs are not adequately covered - There is no comprehensive feedback on drug use. - Guidelines not utilized; technical capacity often not available 	<ul style="list-style-type: none"> - Improve coordination & methods - Strengthen monitoring & supervisory role of GFK; increase capacity to collect & utilize information at GFK through installation of MIS systems, both annual and computerized - Train in needs quantification (DEM); planning with at least 2 years of complete data - Train in estimating drug needs based on consumption & morbidity patterns 	+ + +
	PUSKESMAS: <ul style="list-style-type: none"> - BKM Guideline: Monthly planning for internal use, including drugs received, drugs used, drug stock, visits and morbidity data - Drugs recorded on stock cards as well as delivery book in Puskesmas - Manual on R&R for use at Puskesmas - Drug reporting by PKM-LB2 (LB4) - Morbidity recorded (LB1) - Puskesmas oversees Puskesmas Pembantu stock - Dinkes II Guidelines: drug estimation procedures - Inpres Drug Lists used for drug "selection" (164 items) 	<ul style="list-style-type: none"> - No standardized methods for planning - Unstandardized recording procedures - Ineffective use of recorded data - Large deviation between estimates used in planning and actual amounts; in an analysis of 40 indicator drugs: Deviation of <20% (28% of drugs); 21%-80% (36% of drugs); <80% (34% of drugs) - Planning period is April to March; drugs are used from August to July - Personnel insufficiently qualified for planning activities 	<ul style="list-style-type: none"> - Improve methods for recording data for planning process - Standardize classifications used in recording process - Improve use and understanding of data collection forms - Simplify tasks undertaken at Puskesmas level in relation with drug use/management - Improve coordination and communication with GFK - Establish a feedback system from Kabupaten level about planning process 	+ + + + +

Activities	Policies/Procedures/ Guidelines	Implementation & Problem Areas	Proposed Interventions	Pilot Tested
Procurement	CENTRAL LEVEL: - SK MOH: List A, B1, B2 supplied by government-owned companies; prices are negotiated - SE POM: SPK starting April		- Strategic planning for procurement	ongoing
	PROVINCE LEVEL: - INMENDAGRI: Selection through appointment of tender for List C Contract: mid-June - SE POM: SPK starting April	- Contracting for A&B drugs in June at the latest; contracting for C drugs depends on region - Supplies do not always meet needs	- Develop guidelines for better procurement procedures	ongoing
	KABUPATEN LEVEL (DINKES II & GFK): - INMENDAGRI (Instructions of MIA): Selection through appointment of tender for list C; Technical guideline on quality assurance and prices for List C made by POM - SK MOH '83: Procurement by GFK	- MIA instructions were followed - Planning does not take into account lead time and current stock levels - Drugs received in several packages - 80% of drugs received in December - Procurement not flexible, since shipments arrive primarily once/year	- Plan better methods to improve procurement process - Develop more flexible procurement process	+ +
	PUSKESMAS: - INMENDAGRI: Drug requirements outside lists needs permission from Kakanwil - BKM Guideline: No self-procurement			
Distribution/ Storage	KABUPATEN LEVEL (DINKES II & GFK): INMENDAGRI: Conducted by Dinkes II team according to Dat: II needs - SK MOH: GFK's task: procurement, drug distribution, efficacy and quality control - Quality control in accordance with MOH technical guidelines - Drug storage and inventory control by GFK; recording and reporting by GFK	- Drug acquisition schedule erratic; in general, drugs delivered 4 times/year - Distribution budget neglects transport problems, geographical differences - Puskesmas are not trained to assess drug needs and reorder points - Data on drug use and stock levels in Puskesmas not available to GFK	- Evaluate and redesign MIS to support the function of drug management at Dinkes II & GFK - Review regularly the drug orders received from Puskesmas; feedback to decision makers at PKM - Improve storage facilities, inventory management security and administration quality control programs	+ + -
	- POM Guidelines: Task and function of GFK led by Kandep - Drug management at GFK by pharmacist - Should provide info on drug management - Procedures: GFK is requested to supply drugs to Puskesmas according to requirements and annual allocation	- Inadequate storage capacity at GFK - Inadequate inventory control at GFK - Inefficient recording and reporting system - Lack of qualified managers at GFK	- Develop stock standards - Develop control system - Develop training programs for management	+ + +

Activities	Policies/Procedures/ Guidelines	Implementation & Problem Areas	Proposed Interventions	Pilot Tested
Distribution/ Storage (cont.)	PUSKESMAS: - BKM Guidelines: physical examination of shipments; recording of drugs - Puskesmas supplies auxiliary units	- Inadequate budget for distribution - Insufficient space for storage - Frequent shortages, stock-outs (average of 9 times - 11.6%)	- Increase budget - Improve procedures for distribution to auxiliary units	ongoing +
Dispensing	PUSKESMAS: - Drugs should be dispensed by assistant pharmacists - Syringes should be sterilized	- Qualified staff not available in every Puskesmas - Information about drugs not given - Sterile procedures not followed	- Increase assistant pharmacists - Increase training on dispensing - Educate about sterilization; tighter supervision - Limit unnecessary injections	ongoing + + +
Prescribing Practices	GENERAL: BKM guidelines: Rational prescribing is based on causal diagnoses, not symptoms - Buku merah (red book) gives standard therapy protocols for Puskesmas - Buku merah jambu (pink book) focuses standard treatment for diarrhea and ARI, produced by CDC - Yellow book by CDC for kaders - Daftar Obat Essential National (DOEN), National Essential Drug List: list provided by POM of all essential drugs - Informal rule: drugs given for 3 days	- Under 5 were 20% of visits, which is low given high morbidity of children - Morbidity in PKM/PP (per 1000) under 5: ARI (420.4), skin (176.8), diarrhea (158.9); 5+: ARI (202.6), skin (143.3), chronic resp (91.2), GI (81.6), muscl (45), diarrhea (50.5) - ARI, diarrhea and skin disease were 40% of total cost; for under 5, these health problems were 74% of cost - Polypharmacy prevalent: 3.5 drugs on avg, 50% received 4 or more drugs - Drugs given an average of 3 days — sub-therapeutic doses of antibiotics	- Develop standard diagnostic and treatment guidelines that are adapted local specificities - Provide pre-service training on standard treatment protocols - Provide in-service training - Supervise drug use of PKM/PP - Develop symptom-based treatment for key health problems of health workers - Improve supply of essential drugs - Focus on ARI and diarrhea since these represent a large number of cases and cost; also important child survival issues - Review 3-day policy	+ proposed + + + + +
	INJECTIONS:	- Injection use widespread, although great variability (10% to 80%) - For diarrhea, 33% of under fives and 50% of 5+ yrs. received 1+ injections - For ARI, 53% (<5) and 20% (5+)	- Different behavioral models already exist for effecting change - Focus on training and education - Carry out social marketing campaign	proposed study + +

Activities	Policies/Procedures/ Guidelines	Implementation & Problem Areas	Proposed Interventions	Pilot Tested
Prescribing Practices (cont.)	TREATMENT OF ARI: <ul style="list-style-type: none"> - Pink book & yellow book for leaders (stresses prevention and education) - For mild ARI: symptomatic treatment - For moderate ARI: antibiotics & symptomatic treatment (outpatient) - For severe ARI: in-patient Penicillin injection is recommended for children - Mild ARI estimated to be 80% of cases, 80% by CDC - Rational use of antimicrobials for ARI will decrease drug costs to 1/9th 	<ul style="list-style-type: none"> - A leading cause of morbidity for under fives; largest component of cost - 93% of cases diagnosed as mild ARI - Standard treatment not followed: antibiotics given in 75-86% of visits; analgesics given in 68-70% of visits; antihistamines (61-70%); cough and cold medicines (36-41%); vitamins - In terms of cost, antibiotics ranked first, followed by cold & cough and analgesics; - Observed treatment cost: Rp. 512/case vs. cost if standard treatment: Rp. 153 	<ul style="list-style-type: none"> - Provide training and education on treatment of ARI in the Puskesmas and Puskesmas Pembantu - Improve diagnostic skills - Develop symptom-based treatment protocols for auxiliary units - Develop communication materials - Carry out social marketing campaigns - Audit prescriptions and supervise drugs used to treat ARI 	<ul style="list-style-type: none"> + + + + + +
	TREATMENT OF DIARRHEA: <ul style="list-style-type: none"> - Standard treatment: 100% ORS and 20% antibiotics (pink book) - Tetracycline or erythromycin recommended where indicated - Spasmolytics, anti-diarrheals, clioquinol not recommended 	<ul style="list-style-type: none"> - A leading cause of morbidity for under 5 - Acute cases were 90% of under 5 visits and 75% of five-and-over visits - Standard treatment not followed: under 5: 46% ORS, 73% oral antibiotic; 5+: 36% ORS, 91% oral antibiotic (mostly tetracycline) - 25% received an antibiotic injection - Frequent use of antidiarrheal combinations and vitamins (49%) - Cost of standard treatment slightly lower than observed treatment cost 	<ul style="list-style-type: none"> - Provide training and education on treatment of diarrhea - Improve diagnostic skills - Develop symptom-based treatment protocols for auxiliary units - Develop communication materials - Carry out social marketing campaigns - Audit prescriptions and supervise drugs used to treat diarrhea 	<ul style="list-style-type: none"> + + + + + +
	USE OF ANTIBIOTICS: <ul style="list-style-type: none"> - Antibiotics not for prophylactic use and viral diseases (red book) - Antibiotics should be given in proper doses and amounts (BKM guideline) 	<ul style="list-style-type: none"> - Antibiotics overused: 83% of 5+ and 59% of under 5 got 1 or more antibiotics - Sub-therapeutic amounts commonly given - Choice of individual antibiotic has significant impact on cost 	<ul style="list-style-type: none"> - Educate about antibiotic use within context of specific health problems, especially ARI & diarrhea - Review types of antibiotics used and ordered in Puskesmas and PP 	<ul style="list-style-type: none"> + <p>proposed study on a, b sensitivity test</p>

CHAPTER 1 INTRODUCTION

A. BACKGROUND

The Indonesian National Drug Policy (NDP) has the following five objectives:

- To ensure the availability of drugs that correspond to the actual needs of the population;
- To improve the equitable distribution of the drugs needed and make them accessible to the whole population;
- To ensure the efficacy, safety, quality and validity of marketed drugs and to promote the proper, rational and efficient use of drugs;
- To protect the public from drug misuse and drug abuse; and
- To develop national pharmaceutical potential in order to achieve self-reliance on drugs and to support national economic growth.

The purpose of the Health Sector Financing Project's (HSFP) Pharmaceutical component (PIO/P) is to support the NDP by the design of interventions that lead to more rational drug planning, selection, prescription and use. The major planned outputs are reforms in the way pharmaceuticals are ordered, managed, prescribed and distributed, resulting in improved efficiency and more resources available for essential drugs that have an impact on child survival.

The overall strategy is:

- To conduct a systematic, comprehensive assessment of the pharmaceutical sector that identifies major problems in the above-defined areas;
- To use the results of this assessment to formulate recommendations for intervention; and
- To design intervention packages to be implemented in selected provinces and evaluated to determine their effect.

The PIO/P conducted four focused assessment studies on the management and use of drugs. These focused assessments were contracted to different companies. Each study was first analyzed separately by the companies that implemented them.

- **Drug Management Study (DMS):** an analysis of retrospective data on drug budgeting, selection, procurement, and distribution in six provinces, and interviews with administrators and managers at the central, provincial, Kabupaten, and Puskesmas levels (PT Manggala Jiwa Mikti, *Laporan Studi Pengelolaan Obat*, Buku 1-2 1989).
- **Manpower Study (MPS):** a review of job descriptions, staffing, and procedures in six provinces for personnel involved with drug supply and use, and interviews with personnel at the central, provincial, Kabupaten, and Puskesmas levels (Price Waterhouse Siddik Konsultan PT. *Report of Manpower Study*, HSFP/P, Ministry of Health, Republic of Indonesia. 1989).

- **Drug Use Study (DUS):** a retrospective audit of prescribing in Puskesmas, hospital outpatient, and hospital inpatient departments in nine Kabupaten, and focus groups with physicians and with paramedics in three Kabupaten (Yayasan Indonesia Sejahtera. (a) Laporan Akhir Rawat Jalan di Puskesmas dan Rumah Sakit. (b) Laporan Akhir di Rawat Inap Rumah Sakit Tipe D.C. dan B. (c) Laporan Akhir Diskusi Kelompok Terarah. 1980).
- **Review of Secondary Data and Literature (RSDL):** collection and synthesis of previously published documents and reports related to management and use of pharmaceuticals, to support the findings of the other focused assessments (Yayasan Indonesia Sejahtera. (a) Laporan Akhir Telaah Data Sekunder dan Pustaka Pendukin Studi. (b) Kumpulan Abstraksi Dokumen/Pustaka Pendukung Studi. 1990).

A fifth focused assessment is currently being undertaken.

- **Knowledge, Attitude and Practice (KAP) Study of Managers, Prescribers, Patients and the Community:** focus group discussions with managers, prescribers, patients and community members to explore knowledge, attitudes and practices related to drug management and use. A second component of this study will conduct observations of care in health centers. This study focuses on exploring the findings of the first four focused assessments in more depth and on providing answers to the questions needed to design effective interventions (Center for Child Survival, University of Indonesia, in progress).

A sixth component, which aims to support the generic drug program through bio-availability studies, has been completed.

- **Bio-availability Studies-Generic Drugs:** In 1989 the MOH started a generic drugs program to provide the public with good quality and affordable drugs. By MOH decree, prescribers in the public health services hospital and Puskesmas are obliged to prescribe generic drugs, 80 percent of prescriptions in hospitals and 90 percent in Puskesmas, from the National Essential Drug List (about 350 items) produced by certain pharmaceutical companies that have developed good manufacturing practice management. The private pharmacies are also required to give only generic drugs to patients with generic prescriptions from private doctors. With the generic drugs program, the MOH should be able to provide a greater amount of drugs with the same amount of funds.

It was observed that many doctors still lack confidence in the quality and effectiveness of several generic drugs. This was noted especially in the case of generic drugs with prices that were much lower than the brand name drug. This was cited as a major constraint, particularly in hospitals, in the implementation of the program and a limiting factor for generic drugs competing with their brand name competitors.

Bio-availability testing was considered a non-expensive, objective and reliable method to reveal bio-equivalences among the same drugs, while clinical trials were considered expensive and time-consuming. Drugs were chosen for testing in accordance with the following criteria:

- Narrow therapeutic range;
- Most frequently used for life threatening conditions;

- Cost of the drug; and
- Those not yet tested.¹

The bio-availability study will obtain data on selected generic drugs, compare their therapeutic equivalence and efficacy to brand name drugs and disseminate the results of these tests to prescribers. In addition, the study will disseminate other information about generic drugs, create mechanisms for quality control and feedback to generic drug manufacturers, and implement other measures to support the MOH generic drug program and to increase the use of generic drugs in Indonesia.

B. OBJECTIVES

The rationale for the integrated analysis is based on the fact that there is a sequential link between the chain of events and activities that are a part of the process of policy formulation and implementation, management of drugs and delivery of health services. Specifically, the translation of policies that govern the management and use of pharmaceuticals into administrative regulations, standards, guidelines, procedures and technical manuals/protocols can be analyzed in reference to the priority problems identified in the focused assessments to determine their relationship as causal or contributing factors and links with other variables. The Scope of Work for the Integrated Analysis is attached as Annex B.

Since each of the focused assessments was conducted separately by different contractors, there was no opportunity to review the results in a comprehensive, integrated approach to determine the interrelationships between variables. The integrated analysis focuses on this task of combining and consolidating the conclusions of the research phase of the HSFP/P.

The integrated analysis has four primary objectives:

1. Summarize conclusions from the focused assessments and identify priority areas for intervention;
2. Link the major findings from all of the focused assessments to highlight the relationships between key variables affecting the management and use of pharmaceuticals;
3. Formulate an intervention strategy in close collaboration with policy makers in concerned directorates of the MOH; and
4. Identify research questions for the fifth focused assessment, a Knowledge, Attitude and Practice (KAP) study of managers, prescribers, dispensers and patients/community members, in order to explain findings from the four preceding focused assessments and to answer questions for the preparation of interventions.

¹ Thirteen drugs proposed are: metronidazole 500 mg tab, rifampicin 300 mg tab, cimetidine 200 mg tab, propranolol 40 mg tab, phenytoin 100 mg cap, aminopylin 200 mg tab, dexamethasone 5 mg inj., diazepam 5 mg tab, furosemide 40 mg tab, glibenklamid 5 mg tab, lidocaine 1% inj, digoxin 0.25 inj. and nifedipin 10 mg tab.

CHAPTER 2 METHODOLOGY

A. OVERVIEW OF THE PROCESS OF INTEGRATED ANALYSIS

The integrated analysis of the findings of focused assessments has involved staff of the Project Implementation Office, Activity Coordinators representing various working units of the MOH and their counterparts from the six study provinces, and structural representatives from the central and provincial levels of the MOH. The process of the integrated analysis as it relates to the overall HSFP/P is displayed in Figure 1. Figure 2 represents the organizational structure of the team involved in the integrated analysis and the design of interventions.

The process that was followed included:

1. Analysis of the interrelationships among the findings of the DMS, MPS, DUS, and RSDL, and classification of observed problems into structural, technical and behavioral categories;
2. Discussions of the findings with Activity Coordinators and Consensus Group at each relevant working unit of MOH to gather input into the formulation of an intervention strategy;
3. Formulation of draft recommendations for integrated interventions at a series of workshops with all Activity Coordinators at the Pusat level and with their counterparts in the study provinces;
4. Convening of two Integrated Working Groups — Pharmaceutical Services and Medical Services — to review draft recommendations and develop a plan of action for implementation;
5. Draft recommendation and plan of action for integrated interventions to be put forward by the Integrated Working Groups to the members of the Steering Committee and other structural representatives of the MOH; and
6. Formulation of guidelines for the KAP study to assist the Center for Child Survival with the development of the protocol and instruments.

Figure 1. PIO/P Organizational Chart for Design of Interventions

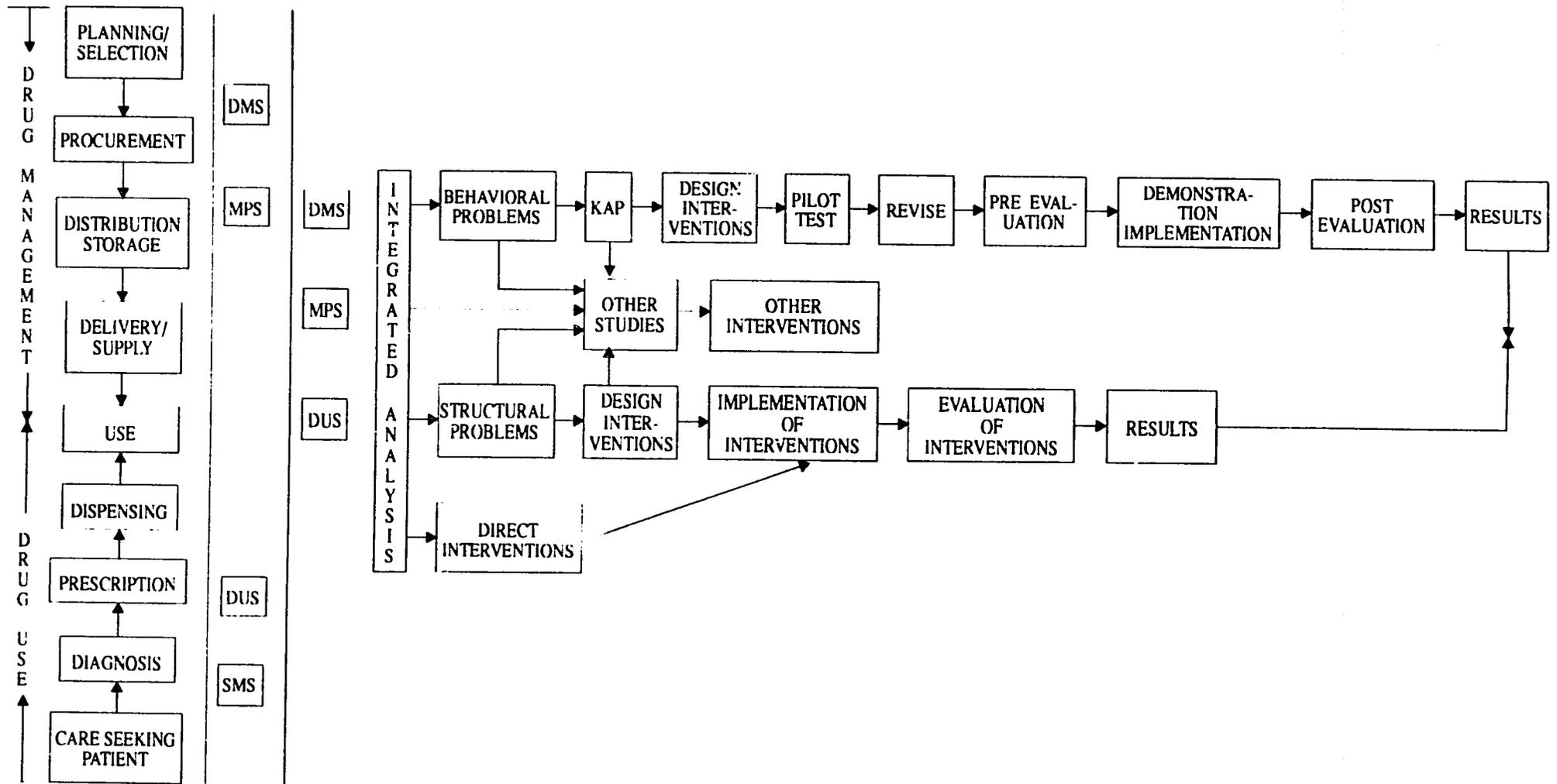
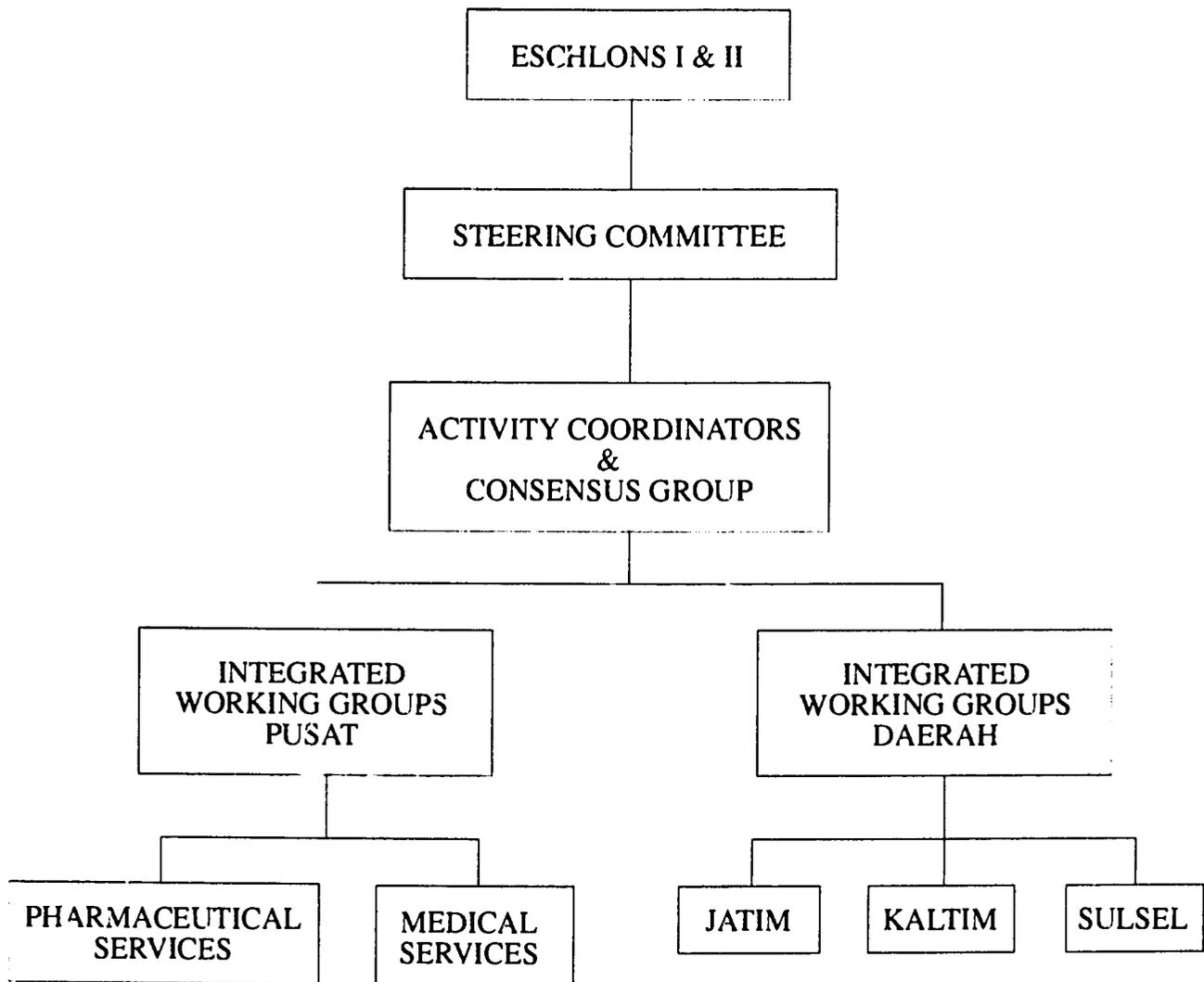


Figure 2. PIO/P Organizational Chart for Design and Implementation of Interventions



B. METHODS FOR INTEGRATION OF FINDINGS FROM FOCUSED ASSESSMENTS

Tables 2 and 3 display information about the methods and the targets of the focused assessments. The methods used in each of the studies determine the ways in which the study findings can be compared and/or combined.

The focused assessment had two quantitative components:

- The retrospective data on prescribing patterns collected as part of the DUS; and
- Information collected on stock levels at the Puskesmas and the Kabupaten Pharmacy Warehouse (GFK) in the DMS.

This information was gathered in the same locations over approximately the same time period. Findings from these studies have been analyzed qualitatively with emphasis on extracting key relationship and integrating findings.

All studies had qualitative components; the DMP, DMS and the DUS collected information on knowledge, perceptions, attitudes and practices by talking with key individuals using an in-depth interview format or focus group discussions. The conclusions arising from these analyses were also compared and consolidated.

Finally, the review of policies and regulations concerning both the use and management of drugs can be related to actual findings by linking the policies, procedures, guidelines, manuals and standards to the findings from the studies and priority problem areas. Establishing this sequence from policies to problems provides a conceptual framework for recommending structural changes and possible interventions.

Table 2 COMPARISON OF METHODS FOR FOCUSED ASSESSMENTS

METHODOLOGY	DMS	MPS	DUS	SDLR
Design	Retrospective (4/85 - 3/88) Interviews (3 - 5/89)	Interviews Observations	Retrospective (4/87 - 3/88) Group Discussion (1/90)	Abstract Review Second Data Analysis (program study) (until 9/89)
Location	Balai POM Dinkes I PHB	BPFM Balai POM Dinkes I PHB, branch Dinkes II 6 GFK IF-RS		
	2 RS Type-B 3 RS Type-C 7 RS Type-D (out-patient treatment) 5 Puskesmas Pembantu 16 Puskesmas	2 RS Type-B 1 RS Type-C P2MOM 12 Puskesmas & Puskesmas Pembantu	2 RS B 3 RS C 5 RS D 14 Puskesmas & 4 Puskesmas Pembantu	
Sample	Total Sample	Heads of Unit sub-units, unit staff, dispenser	Random: 325/unit	
Data Analysis	Quantitative Qualitative	Qualitative	Quantitative Qualitative	Qualitative Quantitative (small portion)

Table 3 TARGET GROUPS OF FOCUSED ASSESSMENT STUDIES

PROVINCE	KABUPATEN/ KOTAMADYA	SAMPLING UNIT	DUS	DMS	DMP
Sumatera Utara		BPFM, BPOM Dinkes I PHB		x x	x x x
	Kab Tapanuli Utara	Dinkes II/Kandep Tarurung GFK Tarutung RS Porsea (D) RS Tarutung (C) RS Dolok Sanggul (D) P Lintong Nihuta P Porsea P Sipaholon	x x x x x x	x x x x x x	x x x x x x
Sumatera Barat		BPFM, BPOM Dinkes I/Kandep PHB		x x	x x x
	Kab Pasaman	Dinkes II GFK Pasaman RSU Pasaman (D) RSU Lubuk Sikaping (D) P Tapus P Bonjol P Landang Panjang	x x x	x x x x x	x x x x x
Jawa Timur		BPFM, BPOM Dinkes I/Kandep PHB		x x	x x x
	Kod Gresik	Dinkes II GFK Kod Gresik RSU Gresik (C) P Cerme P Kebomas P Waringin Anom	x x	x x x x	x x x x
	Kab Pasuruan	RSU Pasuruan (C) P Gondang Wetan P Rejoso	x x x	x x	

PROVINCE	KABUPATEN/ KOTAMADYA	SAMPLING UNIT	DUS	DMS	DMP
Kalimantan Timur		BPFM, BPOM Dinkes I/Kandep PHB		x x	x
	Kab Bulongan	Dinkes II GFK RSU Tanjung Selor (D) RSU Bulungan P Tanjung Palas P Mamburungan	x x x	x x x x x	x x x x
	Kab Balikpapan	RSU Balikpapan (C) P Manggar P Gunung Samarinda	x x	x x x	
Sulawesi Selatan		BPFM, BPOM Dinkes I/Kandep PHB		x x	x x
	Kod Ujung Pandang	Dinkes II GFK RSU Dadi (B) P Tinumbo P Jumpandang Baru	x x x	x x x x x	x x x x x
	Kab Tana Toraja	RSU Elim Rantepao (D) P Getengan P Pangala	x x	x x	
NTB		BPFM, BPOM Dinkes I/Kandep PHB		x x	x x x
	Kab Lombok Barat	Dinkes II GFK RSU Mataram (B) P Gerung P Ampenan	x x x	x x x x	x x x x

CHAPTER 3

REVIEW AND ANALYSIS OF FOCUSED ASSESSMENTS

A. INTEGRATED ANALYSIS OF DRUG USE AND MANAGEMENT

Table 1, Summary Matrix of Integrated Analysis of Drug Use and Management and Use (in Executive Summary), and an expanded matrix attached as Annex A, integrate the findings concerning drug use and management with the review of existing policies and regulations in a logical sequence according to each level of the drug management/use system. The summary matrix highlights key findings and does not differentiate between policies, guidelines and standards, as the extended version does.

These matrices relate each function of the system with the controlling policies:

- Regulations, laws, procedures, guidelines, manuals/protocols and standards;
- Study findings (problems and constraints); and
- Possible interventions.

By analyzing the relationship between the functions, policies, regulations, human factors, problems and possible interventions, the potential effect of interventions can be determined as well as the additional information required to refine or develop new interventions or combine interventions for maximum impact.

This matrix forms the foundation for the following discussions of focused assessment results and recommendations for intervention. Each finding or problem area can be traced back to the procedures, guidelines and policies that underlie it. While this matrix distinguishes between organizational, budgetary and manpower relation issues, the discussion of findings integrates these structural categories into the functional discussion of the management and use of drugs.

B. DISCUSSION OF MAJOR FINDINGS: DRUG MANAGEMENT

1. PLANNING

The studies revealed that the instructions of the Ministry of the Interior and the Inpres A, B1 and B2 Drug Lists established by the Ministry of Health were followed in all study areas. The standard drugs were single drugs called by generic/nonproprietary names. However, constraints impeding the smooth functioning of the system were identified. These stemmed primarily from inefficiencies in operating procedures and lack of qualified personnel.

At the central level, the Inpres orders were used as baseline information for planning and the formulation of contracts with suppliers of Inpres drugs. However, planning at the central level did not employ an efficient strategic plan, covering the three to five-year span necessary for ensuring the availability of drugs, since the raw materials for the production of pharmaceutical products are ordered one and one half to two years before the products become available for use. The planning system did not estimate global community drug needs, nor was there an integrated planning process for the various drug budgets such as Inpres, Askes/PHB or APBD I & II budgets, and program budgets. The review of manpower at the central level showed that the current staffing pattern at the central level could not support these activities.

At the regional level, no standardized methods existed for drug planning. Among the 40 indicator drugs followed in the DMS, a large discrepancy was found between the estimated quantities used for planning and actual quantities. For 72 percent of these drugs, the deviation was higher than 20 percent, with a range up to more than 80 percent.

The position of the GFK under the Kandep represented a major constraint contributing to the inefficiency of the GFK in drug management and planning because of the difficulty of coordination with the Dinkes in its capacity as supervisor of the Puskesmas.

At the Kabupaten level, drug needs forecasting for planning purposes was undertaken for each budgetary source. Coordination among these different planning teams was inefficient and made a comprehensive estimate of drug needs more difficult to achieve.

In the Puskesmas, the methods and formats for recording and reporting data needed for planning were inadequate, particularly the diagnostic standard classifications that were not used in a standardized way across all Puskesmas. In rural areas, the studies found that there were limitations in professional drug management personnel at the Puskesmas. Fifty-two percent of the Puskesmas covered by the studies had no technical pharmaceutical personnel to manage the drugs.

Another constraint for planners at the Puskesmas was the difficulty in ascertaining the lead time for drug orders, which made stock planning calculations difficult.

2. PROCUREMENT

The weaknesses discovered in the planning process had considerable impacts on drug procurement and, thus, an inability to meet drug needs.

The procurement patterns in the Puskesmas differ from those in hospitals because of the sources of financing for drug purchases. For the Inpres drugs used in the Puskesmas and the Type D hospitals, the procurement process was in accordance with the Instructions of the Minister of Internal Affairs, *Imendagri*. Type B, C and D hospitals that use the APBD I and APBD II budgets establish their own procurement process.

3. DISTRIBUTION

The major finding concerning the distribution of drugs was the inadequate representation and use of demand, which was calculated solely on the average figure of past drug consumption. There was no systematic monitoring or evaluation of stock levels or stock-outs within individual Puskesmas or Kabupaten. Stock-outs in Puskesmas were encountered in all study areas, despite the fact that drugs in some cases were not out of stock in the GFKs.

No records of actual drug needs, based on the health needs of patients, were available. The reports from the Puskesmas on drug consumption that are sent to the GFK could not be used to support distribution based on need because they were submitted too late or because no reports were received at all.

The budget for the distribution of drugs was the same amount in all regions, without consideration for varying geographical features or transportation problems.

In order to completely describe the distribution networks in the primary health care system, more information is needed about the provision of drugs to the Puskesmas Pembantu. The Puskesmas is

responsible for supplying drugs to its auxiliary units. However, there are no standardized procedures or budgetary allocations governing this process. This issue will need to be covered in more depth before interventions can be developed.

A major problem in distribution is the lack of consensus on the definition of distribution and the functions for calculating costs. No guidelines exist on distribution management.

These problems lead to a recurrence of stock-outs in the Puskesmas, Puskesmas Pembantu and the GFK. For monitoring supervision, the implementing unit at the Dinas is of great importance; more effective supervision by the Kanwil is necessary.

4. BUDGET

Budgetary procedures are an essential part of the planning process, since planning for each budget source was undertaken separately. The lack of integrated planning for budgetary sources represents a strong constraint in the effort to optimize the use of existing resources.

The Inpres budget, though it is meant to be a support budget, has become the principal financing source for drugs in a Kabupaten (73 percent of total expenditure on drugs). The allocation of the Inpres budget, which is calculated based on a fixed per-capita amount, depends exclusively on the population within a Kabupaten and does not reflect varying health needs by region or other variables influencing actual need for drugs.

There appeared to be no systematic method for allocating regional budgets to drugs. Overall, the use of regional budgetary resources for supporting pharmaceutical expenditures was inadequate. This contribution was found to be inconsistent from year to year, making it difficult to use this budget as a reliable basis for planning drug needs.

An assessment and description of the financial drug planning, allocation and disbursement/expenditure process is required. It should include:

- The identification of key decision makers;
- The policies, rules, regulations and guidelines regarding the drug budget planning, allocation and disbursement/expenditure process in Inpres, Askes/PHB, APBD I and II; and
- The role of Pusat and regional budget contributions as well as obstacles to integration of drug budgets.

These results should be used as a basis for the design of interventions.

C. DISCUSSION OF MAJOR FINDINGS: DRUG USE

1. DESCRIPTIVE CHARACTERISTICS OF PUSKESMAS VISITS

Under-fives were not fully represented in the Puskesmas and Puskesmas Pembantu. Twenty percent of all visits were by infants and children under five years of age. Although this corresponds roughly to their representation in the population, the under-five population bears a disproportionate burden in morbidity and mortality (one-half of deaths in Indonesia occur in this age group).

The majority of patients were treated by paramedics: 69 percent in Puskesmas and 99 percent in the Puskesmas Pembantu. Laboratory tests were used in less than one percent of all visits to the Puskesmas.

2. GENERAL PRESCRIBING PATTERNS

Polypharmacy was a general norm. Patients left the health center with an average of 3.5 drugs; and one half left with at least 4 drugs. Polypharmacy could be an indication of inefficient prescribing behavior and diagnostic insecurity. More drugs were also related to higher drug costs. Finally, although this factor was not measured by this study, patient compliance can be affected by this factor, since it is confusing to remember how to correctly use four or more drugs.

Injection use was widespread, although there was a large amount of variability between health centers. Forty-three percent of under-fives and 55 percent of patients five and over received at least one injection. In certain health centers, however, injections were given to under 10 percent of patients. In others, over 80 percent received at least one injection.

3. ANTIBIOTIC USE

Antibiotics were widely used and represented by far the largest expenditure on drugs. Eighty-three percent of under-fives and 60 percent of the five-and-over age group received at least one antibiotic. About one fourth of the patients received two antibiotics, usually one injection and one oral antibiotic. Oral antibiotics were 46 percent of total drug costs. Ampicillin alone constituted 12.6 percent of cost, while tetracycline constituted 10.5 percent.

Extensive use of antibiotics was accompanied by systematic prescription of sub-therapeutic amounts of antibiotics. On average, the five and over age group received only ten capsules of tetracycline, nine tablets of trisulfa and nine tablets of ampicillin.

It was noted in focus group discussions that while some patients were instructed to return in three days to renew their prescription, very few actually made these follow-up visits.

The choice of the individual antibiotic used had an important impact on cost. For example, ampicillin, which was the highest-cost antibiotic, was used in only six percent of the cases. Tetracycline accounted for approximately the same percentage of the proportion of expenditures, but was more extensively used.

From focus group discussions with prescribers, the choice of antibiotic appeared to depend on the available stock level of each type of antibiotic in the Puskesmas.

4. MORBIDITY PATTERN

For under-fives, ARI and skin diseases were the most prevalent health problems observed (420.4 and 176.8 per 1,000, respectively). Diarrheal disease prevalence was 158.9 per 1,000. These three health problems represented about 75 percent of the total cost of drugs for under-fives.

ARI, diarrhea and skin infections accounted for approximately 40 percent of cases and 43 percent of the cost in the five-and-over age group. To complete the morbidity profile for over-fives, chronic respirator diseases (91.2 per 1,000), gastrointestinal diseases (81.6 per 1,000) and musculoskeletal disease (5.5 per 1,000) must be added to ARI (202.6 per 1,000), skin (143.3 per 1,000) and diarrheal (50.5 per 1,000) disease.

5. TREATMENT OF ACUTE DIARRHEA AND MILD ARI

Treatment patterns for ARI and diarrhea show large deviations from standard treatment protocols. These two health problems comprise 60 percent of drug costs for under-fives and over one third of the costs for the five-and-over age group.

a. Treatment of Acute Diarrhea

Standard protocols developed by the Indonesian Ministry of Health call for 100 percent oral rehydration salts (ORS) use for acute diarrhea. Antibiotics and other antidiarrheal combinations are not indicated. In reality, however, ORS use was lower: 46 percent for under-fives and 36 percent for the five-and-over age group. Moreover, many other drugs were prescribed. About three fourths of under-fives and almost all (90 percent) of the five-and-over group received at least one oral antibiotic. One fourth received an antibiotic injection. Use of antidiarrheal combinations was frequent. Not surprisingly, antibiotics constituted the principal drug expenditure for treatment of acute diarrhea (60 percent of total cost), followed by antidiarrheals.

b. Treatment of Mild ARI

Antibiotics were widely prescribed for mild ARI, as were analgesics, cold and cough medicine, and vitamins. Antibiotics were also the largest cost category for treatment of mild ARI, followed by cough and cold medicine and analgesics.

For acute diarrhea and mild ARI where accepted standard treatment protocols exist, the cost of actual treatment and standard treatment can be quantified and compared. Observed costs for ARI were almost four times the standard treatment costs for under-fives and 2.5 times the standard treatment costs for the five-and-over age group. Observed cost for treating acute diarrhea was higher than the cost of standard treatment, but this difference was not large.

6. DIFFERENCES BETWEEN PROVIDERS: DOCTORS AND PARAMEDICS

Doctors prescribed the same average number of drugs, gave antibiotics in about the same percentage of visits and tended to prescribe the same types of drugs as paramedics. However, differences were found: doctors gave fewer injections, were less likely to prescribe two or more antibiotics and appeared to treat more serious health problems.

7. DIFFERENCES BETWEEN THE PUSKESMAS AND THE PUSKESMAS PEMBANTU

While certain differences could be discerned between practices at the auxiliary and main Puskesmas, the similarities were more striking. Overall, the Puskesmas treated the same health problems in similar proportions, prescribed the same drugs with similar frequency and appeared to have similar prescribing behavior when treating diarrhea and mild ARI. Some differences were that the Puskesmas Pembantu used injections more regularly and were more likely to use multiple antibiotics.

8. PRESCRIBING PATTERNS IN HOSPITAL OUTPATIENT UNITS

a. Hospital Types D, C and B

Overall, Type D hospitals tended to resemble Puskesmas in descriptive characteristics and drug use patterns. Although intended to be referral units for the Puskesmas, Type D hospitals are often the

patient's first source of care. The Type D hospitals have no specialty clinics and share many characteristics with the Puskesmas.

Type B hospitals stand out on the other extreme. As referral and teaching hospitals, they appeared to have different characteristics, drug use patterns and morbidity profiles. Type C hospitals fall in between Type B and Type D hospitals.

b. Type D Hospitals

Type D hospitals shared many descriptive characteristics and general patterns with the Puskesmas. They treated similar types of health problems, although they treated fewer skin problems. General prescribing practices were also similar: polypharmacy was apparent and antibiotic use was high. However, injections were given less regularly at hospitals. Treatment patterns for ARI and diarrhea at Puskesmas and in D hospitals were comparable.

One difference was that 69 percent of the patients were seen by doctors in D hospitals, versus 31 percent in Puskesmas. Variability was high, suggesting the existence of different organizational models among D hospitals. Hospital Lubuk Sikaping had a very low percentage of patients seen by doctors (12 percent) while Porsea and Elim Rante had rates similar to the B and C Hospitals (95 percent and 97 percent of patients were treated by doctors).

c. Type C Hospitals

Type C hospitals shared characteristics with both B and D hospitals. Most cases in Type C hospitals were treated by doctors. The morbidity rates appeared to be between D and C, with more varied health problems and a higher prevalence of accidents. Drug use patterns tended to be more efficient overall than use in D hospitals, but did not reach Type B levels.

d. Type B Hospitals

Type B hospitals had a different profile from C or D hospitals. The under-five population was treated less frequently in B hospitals than in other units (only 12 percent of visits at B hospitals). Almost all patients in B hospitals were treated by doctors (96 percent).

Morbidity patterns were different, with Type B treating more varied health problems and fewer cases of ARI, diarrhea and skin diseases.

Average number of drugs per case in Type B hospitals was 2.32; and only 14 percent of cases received four or more drugs.

Injections were used rarely: 8 percent of the under-fives and one fifth of the five-and-older age group received an injection. Even though antibiotic use was difficult to analyze without adjusting for different morbidity patterns, use of antibiotics was lower in B hospitals (48 percent of over-fives versus 72 percent in C hospitals).

CHAPTER 4

RECOMMENDATIONS FOR STRUCTURAL CHANGE

Three principal categories of issues emerged from the review of the focused assessments. They are:

- Standards of health services provided by Puskesmas and hospitals, particularly in relation to the formulation, implementation and supervision of medical care and drug use;
- The integrity and effectiveness of the system and organization of drug management, which includes the planning, procurement, distribution and dispensing of drugs; and
- Allocation of the budget and the integration of the budget sources used for pharmaceutical expenditures.

The following recommendations for structural change have been elaborated for each of these principal categories. These recommendations are the results of meetings with integrated working groups at the central and regional levels. At the central level, two working groups were formed with members from concerned directorates within the Ministry of Health. The first working group focused on questions related primarily to medical services and the second to those questions related to pharmaceutical services. This division was intended to allow for more in-depth exploration of the issues; the findings were then combined to create a model of structural change, combining the strategic and operational recommendations formulated by the working groups.

Schematically, the health care system can be seen as an integration of medical and pharmaceutical services. Medical services cover all curative, preventive, promotive and rehabilitative services aimed at improving the health status of the community, as well as community health education. The pharmaceutical services component provides appropriate drugs and medical supplies in sufficient amounts and at reasonable costs. This allows the medical staff to provide rational, safe and affordable treatment to the community. Pharmaceutical services also provide drug information for the medical staff and the community about the rational and safe use of drugs.

A. PHARMACEUTICAL SERVICES

A model of integrated management covering all activities from planning and procurement to distribution and drug dispensing was formulated. This model includes procedures for planning, organizing, monitoring, supervising and controlling each activity within the cycle of drug management. Table 4 presents the functions of this management model by activity and administrative level, including the flow of information required to make it function and the administrative units that are responsible for each activity.

1. THE PLANNING PROCESS

This model uses a bottom-up approach to planning, which requires that it be supported by accurate and prompt information from the Puskesmas Pembantu. However, while Puskesmas are staffed by paramedics and doctors, they are extremely limited by the numbers and qualifications of their pharmaceutical personnel, and Puskesmas Pembantu have only a paramedic and a clerk. Because of this, it is recommended that the administration and planning of drugs be simplified at the Puskesmas and Puskesmas Pembantu.

Table 4 ACTIVITIES BY ADMINISTRATIVE LEVEL

	ACTIVITIES			
	Planning	Procurement	Distribution	Dispensing
PLANNING	ALL LEVELS	C-PR-B	C-PR-KB	KB-PK
ORGANIZING	C-PR-KB-PK	C-PR-KB	C-PR-KB	KB-PK
MONITORING	C-PR-KB-PK	C-PR-KB	C-PR-KB	KB-PK
SUPERVISING	C-PR-KB-PK	C-PR-KB	C-PR-KB	KB-PK
CONTROLLING	C-PR-KB-PK	C-PR-KB	C-PR-KB	KB-PK

C = Central Level; PR = Province; KB = Kabupaten; PK = Puskesmas

At the same time, the medical administration of the Puskesmas and Puskesmas Pembantu should be improved in order to support the efficient and accurate planning of drug requirements. Improvements are needed in the recording and reporting of morbidity, particularly in the classification of diseases, which should correspond to those used in the standard therapy guidelines. In addition, accurate data on the patient's profile is necessary to enable the calculation of the doses and the quantities of drugs consumed. Accurate recording of the number of visits to the Puskesmas and Puskesmas Pembantu is also essential for planning purposes. Figures 3 and 4 offer models of the drug management system.

It is also recommended that the recording system be simplified by eliminating information about budgetary sources from the records kept by Puskesmas.

The methods for estimating and forecasting drug needs should be based on morbidity data and on data about past consumption. Since there is a difference between the projections resulting from one method or another, the interpretation of the results from these two procedures requires training. This training will improve the drug planners' capacity to calculate more accurate estimates of need.

The first phase of the planning process will produce an estimate of total drug needs for the Kabupaten, including drugs to be procured using funds from Inpres, the APBD-I or the APBD-II, and Askes/PHB.

Forecasts of the initial stock at the time drugs are supplied are based on delivery schedules. Determination of the position of the end-period stock will enable the calculation of the quantities of drugs to be procured by using the following formula:

$$\text{Initial Stock} + \text{Quantity of Drugs Supplied} = \text{Quantities of Drugs Needed} + \text{Final Stock}$$

Since the initial stock, the quantity of drugs needed, and the final stock can be calculated, the quantity of drugs to be supplied can also be calculated.

This estimation of drug needs makes it possible to calculate budget requirements for expenditures on drugs. Moreover, these budgetary calculations can be made more uniform, due to the current regulations governing the use of generic drugs throughout Indonesia.

Estimated budget needs can then be compared with available funds from the various budgetary sources such as Inpres, APBD, and Askes/PHB. Application of the ABC (classification of drugs based on

consumption) and the VEN (classification of drugs by Vital, Essential, Nonessential categories) methods of analysis will guide decisions about priority drugs, if the available funds do not permit procurement of all products in the needs forecast. These two methods of analysis give weight to both the medical and economic aspects of this process.

Figure 3 Model of the Drug Management System

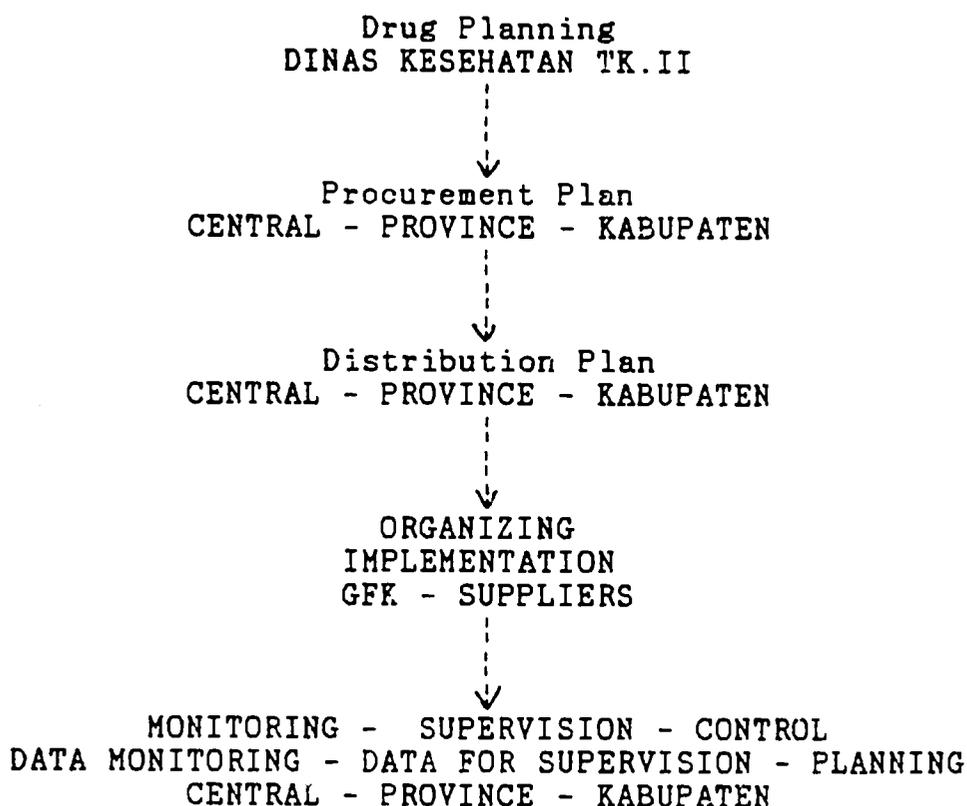
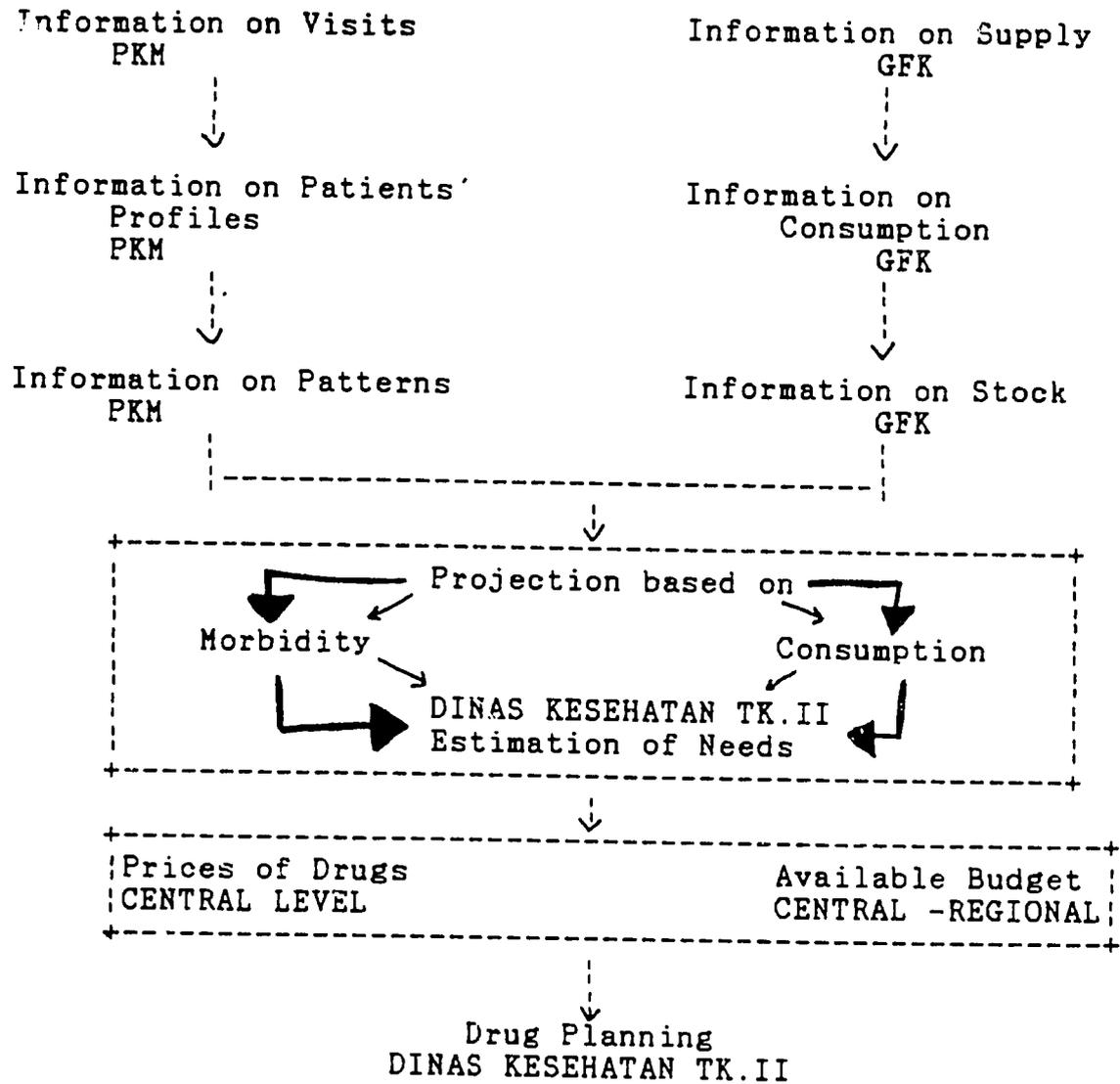


Figure 4 Model of the Drug Management System, page 2



The decision matrix will take the following form:

AV	1	AE	1	AN	2
BV	1	BE	2	BN	3
CV	2	CE	3	CN	3

This matrix gives a rationale for choosing among drugs; those drugs belonging to Group A (those having a high rate of consumption) and Group V (vital drugs) would be chosen first. All drugs falling into shaded areas on the matrix are classified as first priorities. Meanwhile, drugs belonging to Group C (rarely used/having a low consumption rate) are least necessary. In cases where the budget is incompatible with estimated needs, these drugs could be reduced.

2. PROCUREMENT PROCESS

Once an integrated picture has been obtained of total drug needs and the budgetary allocations for drugs, it is possible to formulate the procurement plan.

Considering that Inpres represents the main budget for drugs, procurement of the Inpres drugs should be the basis for calculations concerning the planning of drug procurement from non-Inpres sources.

This implies that Inpres must be able to provide all types of drugs, although in terms of the total quantities procured, the Inpres orders are to be complemented by drugs from other budgetary sources. Thus, on the basis of the projection of monthly consumption, calculation and integrated planning can be done for estimated drug requirements from all major sources.

For the calculation of average quarterly consumption, minimum stock and lead time will be used.

The formula to be used is:

$$\text{Point of Order} = \text{Minimum Stock} + (\text{Average Consumption} \times \text{Lead Time})$$

Using this algorithm, the point of order can be determined; when the stock reaches the point of order, the officer in charge can begin the process for procuring a new supply.

The process of procurement should not only concern issues relating to procurement in the short term, which in operational terms are annual in nature, but should also focus on the long-term strategic aspects. These strategic concerns cover the safeguarding of products and raw materials for drugs in the long term used for production and then distributed in the forthcoming fiscal year, and finally consumed in the third year. Because of the long-range planning necessary for this process, it is recommended that the strategic planning be made at the national level.

To support the strategic planning functions, it is recommended that the existing organization be improved and reinforced with backup information on drug use and drug supply supported by budgets from Government sources.

In addition, considering that more than 80 percent of the drugs consumed in the Government sector are generic drugs, it is proposed that strategic planning be linked with the generic drug program, nationally.

A study of this issue should be made to establish recommendations for the development of a strategy and policy on the production and supply of generic drugs nationally. This should include the coordination of drug supply in both the Government and the private sectors.

Since the supply of generic drugs will be supported by the private sector, it is recommended that the mechanism of coordination, safeguarding supply and distribution to all regions in Indonesia be supported by a monitoring and control system.

3. DISTRIBUTION PROCESS

The process of distribution takes place from the supplier at the central level to the GFK, the drug warehouses at the district level (Level II), or from the supplier in the Province to the GFK, or from the Supplier in the Kabupaten to the GFK. This process of distribution to the Kabupaten or regency warehouse is commonly known as the **primary distribution system**.

The second process of distribution takes place from the GFK to individual health facilities; this process is commonly known as the **secondary distribution system**.

Both these processes are closely related to the drug stock at the point of destination.

It is recommended that the system of overseeing and monitoring distribution be improved by reinforcing and centralizing the control for implementing and supervising both the primary and the secondary distribution circuits.

In the proposed model, the Kabupaten warehouse (GFK) serves as the center of monitoring for receipt of goods from suppliers of the various levels, and a center for monitoring of drugs stock at the Puskesmas level.

It is, therefore, recommended that both these systems be improved by requiring that minimum stock be stated on each stock card, especially for the secondary distribution system.

A principal shipment is sent by the GFK on the basis of the report stock levels at the Puskesmas and the allocation of funds for logistics, based on the available budget for distribution. Additional supply is shipped based on the demands of the Puskesmas resulting from changes in needs.

It is recommended that 70 percent of the budget be used for the main shipment, while the remaining 30 percent be set aside for additional distribution.

To enable the GFK to carry out its function, it is recommended that the current Management Information System be improved by designing a direct reporting system so that the GFK will have access to up-to-date information about adjustments in the position of drug stocks in the health care units of the Kabupaten.

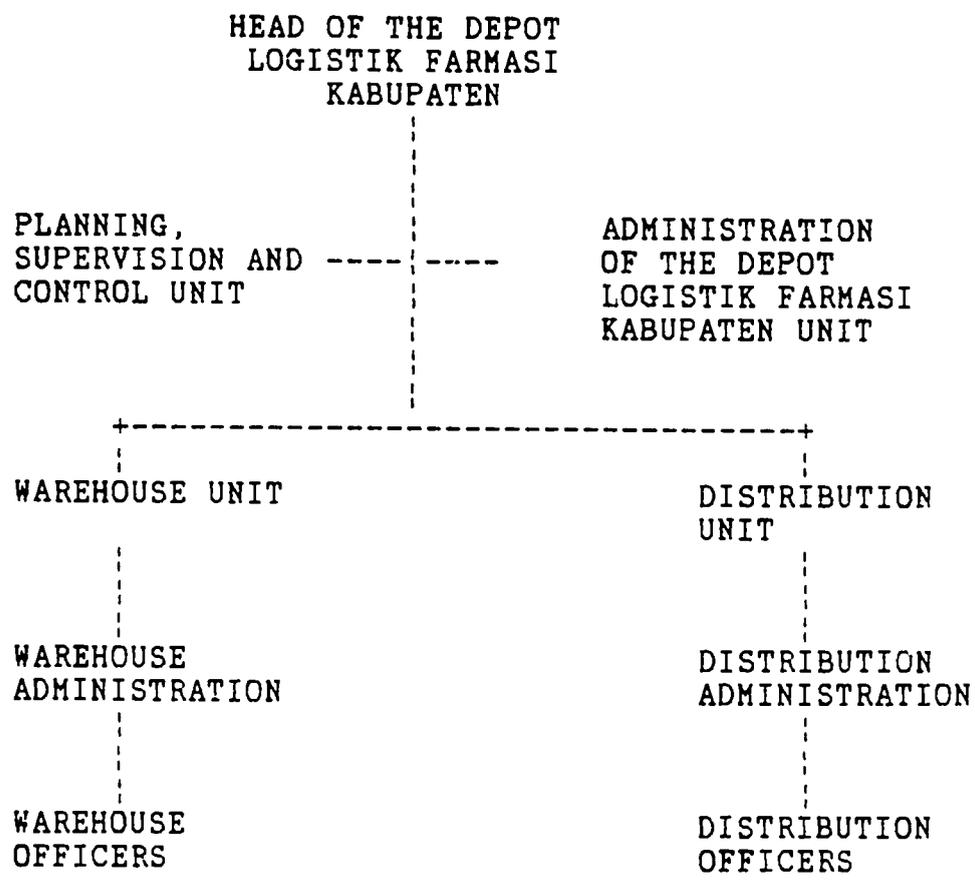
To enable such monitoring, it is recommended that reports be submitted on a monthly basis. Based on this information, the programming of drug dispensing to health care units in the Kabupaten can be made. For additional requests it will be necessary to design a special form that will concurrently provide information on why the deviations from anticipated needs have occurred.

In view of the fact that such functions as monitoring, supervision, planning of distribution, distribution services, and control in this model of drug management are centralized in the GFK, it is recommended that this process be computerized in GFKs where the amount of administrative work is burdensome.

It is also proposed that the organization of the GFK be turned into a UPT (*Unit Pelaksana Teknis* or Technical Implementing Unit) of the Dinas. This unit will function as the implementer of the Drug Logistics Service in the Kabupaten. Considering that its main function is not only to serve as a warehouse, it is further recommended that the UPT bear the name *Depot Logistik Farmasi Kabupaten* (DLFK).

The organization plan presented in Figure 5 is a conceptual model of the proposed organization of DLFK and needs to be equipped with job descriptions, requirements for holding office and guidelines on the working procedures.

Figure 5 Organization of the Depot Logistik Farmasi Kabupaten



This organization model differs from the previous one, particularly in its main function as a unit that is specially assigned to handle both periodic and annual planning — supervision and monitoring for the control of stocks in Kabupaten, to monitor and supervise distribution, and to monitor the services rendered by suppliers.

The goal of establishing this unit is to improve drug management practices in the Kabupaten, particularly in terms of:

- Collecting available data required for estimation of drug needs, evaluating needs based on morbidity projections, and calculating budgetary needs for expenditures on drugs;
- Monitoring the performance of suppliers to support the team in charge of procurement;
- Making an evaluation of drug planning by comparing it with the procurement plan, and the distribution with the realization;
- Monitoring and evaluating drug use in Kabupaten from the aspect of the existing stock and the pattern of diseases reported to the Dinas TK. II;
- Monitoring and evaluating distribution costs in Kabupaten; and
- Monitoring and controlling drug stock in Kabupaten in order to be able to continuously and optimally support public health care services.

It is recommended that DLFK be equipped with two pharmacists having the following offices and functions:

- The Head of DLFK will be administratively responsible for the achievement of the working targets and the working procedures of DLFK.
- The Assistant to the Head of DLFK will be responsible for achieving working targets and for the functions of the unit in the fields of planning, supervision, and control of stock and distribution.

For the Warehouse and the Distribution Units, it is recommended that an assistant pharmacist be installed.

4. DISPENSING PROCESS

The process of dispensing drugs covers the dispensing of drugs directly to patients as prescribed by the doctor or health care provider. This process is carried out by a "drug dispenser" who works in the dispensary (Outpatient Treatment Unit, in pharmaceutical installations of hospitals or Puskesmas pharmacies) or in other rooms equipped with drug chests (Puskesmas Pembantu) or drug lockers (mobile Puskesmas).

The process of secondary dispensing of drugs takes place in Puskesmas/Pharmaceutical Installations of hospitals that cater to Outpatient Treatment Units, Puskesmas pharmacies, Puskesmas Pembantu, mobile Puskesmas, Posyandu, and Kaders. This dispensing unit is known as the *Gudang Obat Induk Instalasi Farmasi Rumah Sakit* or the *Gudang Obat Puskesmas* (the Puskesmas Pharmaceutical Warehouse).

Due to the limitation of manpower in Puskesmas, it is recommended that the administration and arrangement of the stock of drugs in Puskesmas be simplified.

The recommended simplifications are as follows:

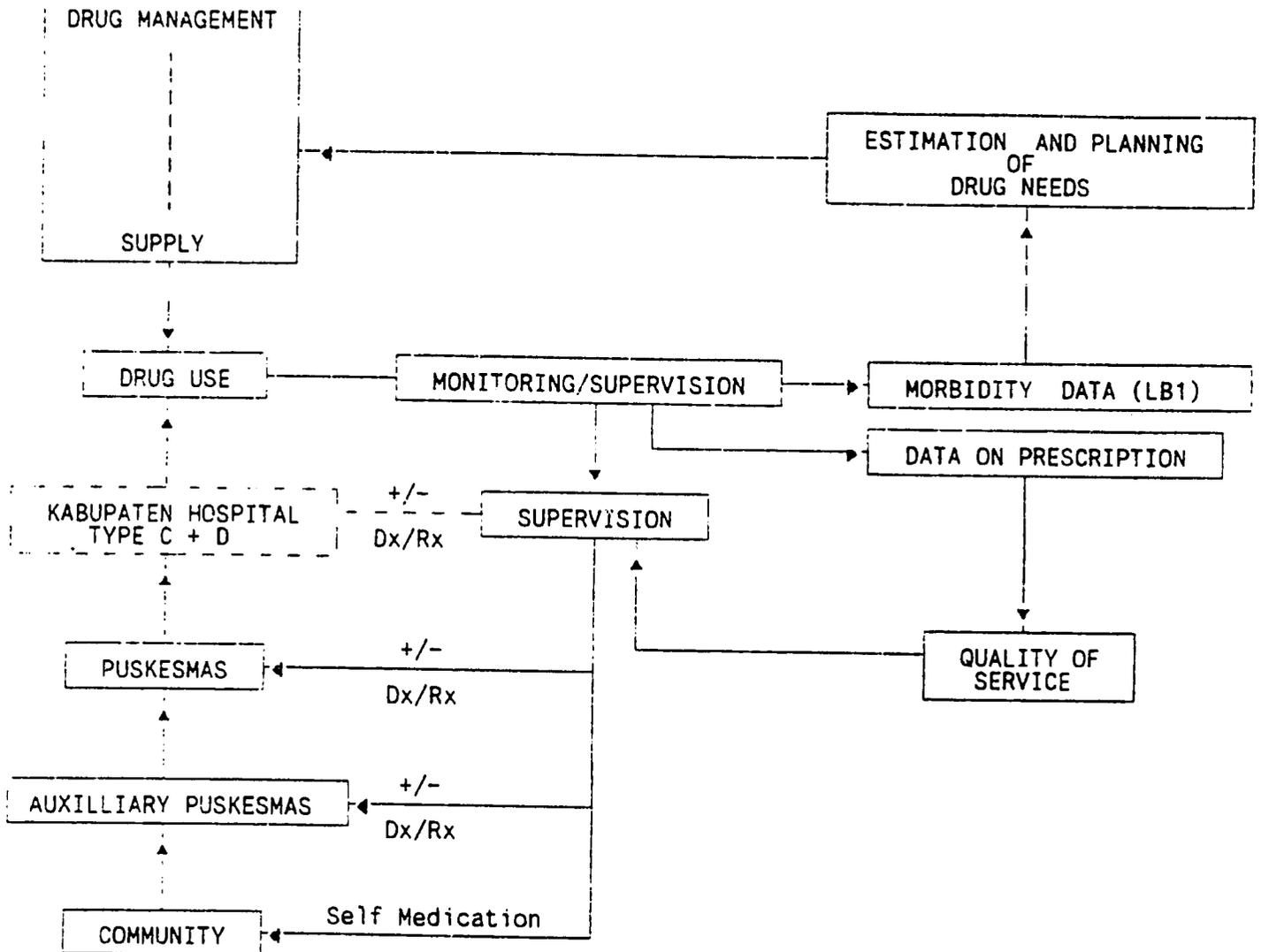
- Puskesmas deal with only one source of drugs, DLFK. In this way, Puskesmas will no longer be burdened with such tasks as separating stocks of drugs and administering drugs on the basis of their budgetary source. The task of recording will be taken over by DLFK.
- Every drug stock card in the Puskesmas dispensary has a record of the allowable minimum and maximum stocks, and the point of drug order, so as to facilitate ordering of drugs.
- For units engaged in the primary dispensing of drugs, apply the Inpres system in which the maximum quantities of drugs are defined, and replenishment is done automatically on the basis of the quantities consumed. The replenishment is done by the Warehouse by providing replacements in quantities that are equal to those consumed; in such a way, the stocks of drugs will maintain their initial quantities.
- As has been regulated, all prescriptions issued by Puskesmas or hospitals are to be recorded first in the "Apotik" or "Pharmacy" to ensure that the planning of drug needs is backed up by more accurate data.

It is recommended that assistant pharmacists be installed and have the responsibility for drug supply, distribution and drug dispensing in Puskesmas.

B. MEDICAL SERVICES

The conceptual background for the Medical Services Interventions is that the rational use of drugs is related to correct diagnosing, prescribing based on standard treatment, and correct dispensing. The outcome of rational drug use provides the necessary information for planning, which in turn ensures adequate supply. Figure 6 presents this relationship between drug use and management.

Figure 6 Drug Use and Management



Notes :

Dx = Diagnosis
 Rx = Therapy

1. POLICY DIRECTIVES FOR THE RATIONAL USE OF DRUGS

Intervention objectives are to:

- Improve the use of drugs;
- Improve the management of both supply and use of drugs; and
- Set up a structure or mechanism for monitoring drug use in the system.

For this reason, the pilot phase of interventions will focus on improving drug use through training and the development and testing of systems to improve use.

The following directives provide guidelines for the development for drug use interventions:

- Improvement of profession standards and medical service standards;
- Improvement of the information system: Review and simplify the morbidity data (LB1) and consumption data (LB4) and the development of data for monitoring use; and
- Development of a monitoring and supervision system for the Puskesmas and Puskesmas Pembantu.

2. IMPROVEMENT OF PROFESSIONAL STANDARDS AND STANDARDS OF CARE

The hospital component of the HSFP has already begun to formulate standards:

- Professional standards (to establish standards for qualifications, equipment and support necessary to provide health services within each health care unit); and
- Service standards that cover many aspects, including standards of curative care.²

Standard treatments should be adjusted to reflect regional differences based on the *buku merah* ("red book" of standard treatment protocols) and to involve local medical professionals who will be part of the supervision team. Standards should be accepted and used by prescribers.

The prescriber must be trained to provide information about the rational use of drugs.

It is also time to further define standards for the referral system at the primary health care level. An improved referral system will improve the quality of health care given by providers as well as provide clearer guidelines and channels for supervision.

The question of standards for rational drug use and referral must take into account the community level, since patients have their own perceptions about treatment and their own expectations when they go to a health center. Usually, the failure of attempts at "self-medication" prompts the patient to seek care at the health center. It is at this point that the notion of referral for service delivery begins to have a meaning.

² In developing the strategy for the primary care level, it will be important to carefully choose the language used, since many terms have already acquired specific meanings. To avoid any misunderstanding, it is necessary to clarify the terminology used so that all participants in these discussions are speaking the same language.

Puskesmas Pembantu and mobile Puskesmas were created to increase coverage and access as well as equity of services. The material and manpower resources of the auxiliary services are more limited than those in the Puskesmas.

In accordance with the qualifications and resources available, it could be useful to think about simplifying the types of treatment in the Puskesmas Pembantu in relation to the Puskesmas by basing diagnosing on a symptom-based system in accordance with standard treatment guidelines. The types of health problems treated at Puskesmas Pembantu could be defined in relation to resources in both manpower and materials.

However, a referral mechanism would have to be established before this system could be put into place. Standards for diagnosing and treatment must be available for use in the Puskesmas and Puskesmas Pembantu. Perhaps regional groups with the hospital could establish standards based on national standards that would be adapted to local needs and practices.

By using standard treatment protocols, it is hoped that the consumption of drugs will correspond with observed morbidity patterns. This will facilitate drug planning and improve the quality of services and the cost-effectiveness of health care at the Puskesmas.

3. REVIEWING AND IMPROVING THE INFORMATION SYSTEM

Current MOH objectives place an emphasis on service quality. The evaluation of medical services provided within the health care system must not only be based on coverage, but must also include indicators of quality defined as adherence to MOH standard treatment guidelines. In order to implement a quality control system, the information system needs to be reviewed and improved.

The rational use of drugs needs to be monitored by the doctors with information about prescribing patterns and morbidity. The accuracy of diagnosing and prescribing must be monitored regularly. Currently, only the LB1 forms for recording morbidity data and the LB4 forms for recording consumption data are available. No methodology exists for evaluating the rational use of drugs.

The DUS found many problems in the recording and reporting of information. The ICD categories used cannot fully accommodate all the health problems found in the field. Concurrently, the categories sometimes overlap. Current practices for resolving the ambiguities in the recording and reporting procedures are not uniform, resulting in unstandardized reporting among Puskesmas. (For example, it is not clear how to code cases with two diagnoses.) These codes need to be more specific and standardized procedures for classifying health problems need to be developed.

4. SUPERVISION

In the Puskesmas, 69 percent of the patients were treated by paramedics while in the Puskesmas Pembantu, 99 percent of all patients were treated by paramedics. The health problems that were treated, as well as the drugs prescribed, were similar for doctors, paramedics and prescribers in the Puskesmas and the Puskesmas Pembantu. In theory, the Puskesmas doctors supervise the paramedics in the Puskesmas and Puskesmas Pembantu. However, the concept, methods and quality of supervision within the system have not yet been elaborated, resulting in inadequate supervision for the paramedics, who need instruction in order to be able to diagnose and prescribe rationally.

This situation has implications for quality of service, and imposes a moral burden on the paramedics who are not trained to diagnose and prescribe. The doctor bears a heavy responsibility when authority is

delegated under these conditions. The need for supervision is greater when the paramedics' roles are not defined and when they have inadequate training for carrying out their responsibilities.

Given the managerial responsibilities that also define the role of the Puskesmas doctor and place restraints on his or her time, it is important to consider the legal methods for guaranteeing security for the providers, particularly in supporting the MOH policy on the improvement of quality. The types of medical services administered in the Puskesmas Pembantu should be determined.

For the Puskesmas and the Puskesmas Pembantu with the types and composition of personnel available, there is a need for decisions from the Ministry of Health about the types of treatment that can be given at the various steps on the health care ladder as well as the possibility of increasing the supervision given by the Puskesmas doctors.

Supervision should be directed toward both structural and professional issues. This results in the necessity of incorporating the Dinas and the hospitals, which function as the institutions for referral. A supervision guideline needs to be developed. This idea has to be incorporated into the hospital component of the Health Sector Financing Project, which has already begun to develop various standards and a committee for planning and treatment. This would ensure the continuity of referral from the primary level of care to the second.

An institutionalized team should be established to oversee the rational use of drugs on the regional level. This team will include key medical professionals recruited from the *Komite Farmasi dan Terapi*, recently established at the Kabupaten-level hospital, as well as the staff from the Dinas Kesehatan.

In line with the Government's policy on giving more authority to the regions, the Dinas Kesehatan should certainly be involved. These two parties (RS and Dinas) will be the supervision institution for the whole health care system, including the community level.

5. POSSIBLE CONSTRAINTS AND PROBLEMS

Several obstacles and constraints need to be considered in the conception of interventions:

- There is a high turnover rate among Puskesmas doctors, resulting in more energy and resources being devoted to training and supervision, and limited continuity.
- Legal constraints in the definition of the paramedics' roles, as well as the limits on the doctors' time, mean that we must move with caution in defining what the paramedic can and cannot do. This can be overcome by setting standards for "Facilities" rather than "Manpower" (i.e., Puskesmas vs. Puskesmas Pembantu).
- In reality there is not yet a forum in the Dinas Kesehatan Dati II for supervision as it is defined above, especially since the Pemulihan Kesehatan can sometimes be staffed by paramedics.

C. THE BUDGET FOR DRUGS

The focused assessments were not intended to reveal the process of the formation and allocation of the drug budget, either at the central level or at the regional levels. The focus assessments did find, however, that there was no systematic monitoring of all the drug budgets. A study of the process of the formation of the budget design has been conducted by the World Bank HP3 Project. However, no

attempt has yet been made to study questions relating to the integration of budgetary sources and the impacts of unintegrated budget expenditures.

It is recommended, therefore, that a study be undertaken to reveal the problems that have hampered the realization of an integrated approach in the use of budgets at Kabupaten level, the monitoring and evaluation of drug budgets, expenditure and use from the various sources at the Kabupaten, Province, and National levels.

D. STRATEGIC AND OPERATIONAL RECOMMENDATIONS

Because the key problems identified in medical and pharmaceutical services have both structural and behavioral components, these recommendations will necessarily involve two separate levels of activity if they are to be successfully implemented. On the one hand, certain **strategic policies, regulations, structures, and systems** currently in place in the areas of drug supply administration and medical service delivery will need to be altered to accommodate necessary changes in behavior. On the other hand, **operational interventions** will need to be put in place to train administrative and medical personnel in new forms of behavior, and to provide them with supports and supervision to maintain these new behaviors over time.

From the discussions of structural directives for changing drug management and use, the following strategic and operational recommendations have been identified.

1. STRATEGIC RECOMMENDATIONS

a. National Strategic Planning for Drug Supply

- National drug supply should be planned with a horizon of at least three to five years, in order to allow necessary time for importation of raw materials, planning and development of production facilities, etc.
- Since the same production facilities produce drugs for both the public and private sectors, the supply needs of both sectors need to be integrated into a single plan.
- In line with Government directives regarding the use of generic drugs in all sectors, procurement and distribution of generic drugs in the public sector need to be integrated into a national system for generic drugs.

b. Standards for Medical and Pharmaceutical Services

- Procedures for developing, implementing, monitoring, and revising professional standards and standards of service need to be established.
- Professional and performance standards need to be articulated for both medical and pharmaceutical personnel, along with criteria for evaluating quality of services.
- In order to monitor and encourage adherence to these standards, a structure for supervision of medical and pharmaceutical services in line with the criteria specified needs to be developed.

- In addition to standards for personnel and supervision, standards for infrastructure to support their activities need to be established (for example, required numbers and types of facilities and equipment).

c. Information Systems to Support Drug Supply and Use

- In order to ensure correct use of drugs, there is a need for correct, unbiased information on drugs at all levels down to the Puskesmas, especially on essential drugs and generics.
- In addition to information on drugs, there is a need for information on drug use in both the public and private sectors, in order to allow effective planning and monitoring quality of care.
- Historical and current information on use should be available to both managers and service providers at the Provincial, Kabupaten, and Puskesmas levels.

d. Rationalization of Pharmaceutical Budgets to Meet Community Needs

- Methods need to be developed that allow for an objective assessment of drug needs, and the budgetary outlays to support these needs, for the community as a whole.
- The role and functions of the regional budgets (APBD-1, APBD-2, APBN) in meeting community drug needs should be redefined, and the relationship of these budgets to the Inpres budget clarified in the minds of regional health planners.
- Assessment of community drug needs requires a system of reliable information on community morbidity, including information on services delivered in the private sector.

2. OPERATIONAL RECOMMENDATIONS

a. Functional Planning for Adequate Supply of Drugs

- The Dinas Kesehatan Tingkat II should become the implementing unit for drug planning, distribution, and use at the Kabupaten level, and functions requiring competence in drug management should be centralized there.
- Community drug needs should be able to be determined at the Kabupaten level, and systems necessary to support this task should be established at the Dinkes TK. II.
- Drug needs at the Kabupaten level should be determined based on at least three years of historical data on drug consumption and morbidity, and should be projected at least two years into the future.
- The GFK should become the functional planning and coordinating unit for managing drug supply and use, and it should be moved administratively from the Kande to the Dinkes, which has the responsibility of supervising the Puskesmas.
- Planning of procurement should take account of lead time for the delivery of drugs, and anticipated stock levels at the point of delivery rather than at the point of planning.

- Procurement should as far as possible be organized more than once a year in the Kabupaten.
- Distribution of drugs to operating units should be a function that takes place at the Kabupaten level.

b. Enhancement and Supervision of Service Quality

- Standards of therapy should be formulated, and adherence to standards monitored as a function of the Dinkes TK. II.
- Regional supervision of operating units needs to be restructured, and clear delineation of responsibilities at the Provincial and Kabupaten levels established.
- Linkages should be built between the Dinkes TK. II and the Pharmacy and Therapeutics Committees of the rumah sakit at the Kabupaten level, leading to implementation of a supervisory system for medical services.
- The office of the Dinas Pemulihan should be given the responsibility of collecting appropriate information on quality of services in addition to coverage.
- The administrative burden of the doctor at the Puskesmas should be simplified by centralizing some drug management functions currently handled at that level.
- Assistant pharmacists with special training in administrative pharmacy need to be installed at all Puskesmas in order to handle necessary technical tasks in the area of drug management.

c. Monitoring of Drug Utilization

- A capacity for monitoring of drug use must be developed in parallel with changes in drug supply in order to prevent these two systems from becoming incompatible.
- There needs to be a revision of the forms for classification of diseases (LB1) and drug consumption (LB4), as well as development of a new system for monitoring drug use.
- The support of a computer is necessary at the Dinkes TK. II for the purpose of monitoring stock levels and drug management information, as well as for management reporting.

d. Integrated Budgeting and Flexibility of Budget Realization

- There needs to be integration of the various budgets for drugs — including Inpres, APBN, and the special program budgets — and the budget should be planned as a whole at the Kabupaten level.
- Budget realization should incorporate flexibility for adjustment within a one-year framework for at least the APBD-2 and PHB budgets to allow for necessary changes due to unanticipated circumstances.

- The budget allocation for distribution of drugs needs to account for differences in geography and transportation costs in various regions.

CHAPTER 5

RECOMMENDATIONS FOR THE DESIGN OF INTERVENTIONS

A. IMPLEMENTING STRUCTURAL RECOMMENDATIONS

The strategic and operational recommendations for intervention imply a wide range of structural modifications to the current system. Few of these recommendations can be directly implemented without first developing methods, materials, organizational models, and implementation strategies. In order to design and test appropriate and effective strategies for achieving these recommended structural modifications, it is important to test the principles underlying these recommendations by way of behavioral interventions in pilot areas.

The strategic and operational recommendations made by the central and regional working groups form the foundation for defining appropriate pilot interventions. Pilot interventions must also be selected in relation to their ability to achieve measurable outcomes, so that their effectiveness can be evaluated. Successful results within pilot areas will provide the justification and support needed to elaborate broader-based interventions to achieve structural change. This feedback function is the fundamental rationale for pilot testing.

B. PROPOSED INTERVENTION MODELS

Each of the pilot interventions, which correspond to the recommended structural modifications to the drug system, will help to test one or two changes to improve the overall system. Experiences from the pilot interventions will be rechanneled to decision makers to refine overall strategies and to provide indicators for selecting between alternative models. Each pilot intervention and its relation to the process of structural change is described briefly below.

1. Innovative training programs in drug planning, distribution and control for drug system managers will be designed to help them interpret and use information about drug consumption and morbidity to estimate drug needs, to distribute drugs more efficiently, and to manage their work more cost-effectively. The recommendations resulting from the integrated analysis envision a fundamental reorganization of the functions of the GFK in planning and distributing drugs, and the incorporation of an integrated Management Information System (MIS). The success of these new structures when they are implemented will depend in part on the ability of innovative training programs to increase comprehension and regular use of key principles of organization, drug planning, logistics, and information.
2. Developing and implementing an integrated MIS responds to the need for improved information for managers to plan, monitor, and control the drug system. The reorganized GFK — a central component of the implementation of the MIS — will assume the responsibility for active management of drug procurement and distribution in the Kabupaten. Installing an information system sensitive to changes in drug consumption is also necessary if interventions in drug use are to achieve an impact on drugs ordered and distributed in the Kabupaten.

3. **Training in health economics and budget planning for planners at Dinkes TK. II** addresses current problems in the way that the budget is allocated for drugs by providing training and information for the Kapala Dinas about the health needs of the population, and a framework and tools for effectively lobbying for necessary funds during the elaboration of the budget.
4. **Training for providers in diagnosis and prescribing for ARI and diarrhea, and in Government drug programs** will start to introduce standards of treatment and quality of care. Rather than being a unidimensional process, training covers a wide variety of educational activities aimed at improving knowledge and changing diagnosing and prescribing behavior. This process also involves training providers how to effectively convey messages about rational prescribing to patients and the community.

For the pilot interventions, training in diagnosing and prescribing will focus on diarrhea and ARI, since these two health problems account for a large proportion of visits to the Puskesmas and clearly defined standard treatment guidelines already exist. Some of these training interventions will also cover the basic principles of the MOH drug programs. (See below for a discussion of the identification of priority areas.)

5. **Providing unbiased drug information to managers, providers and the community** complements training to improve the rational use of drugs by providing channels for objective information about pharmaceuticals. Currently, the most regular source of information to providers and consumers comes from pharmaceutical company detailers and advertising. The rational use of drugs in the medical system depends in part on the availability of objective information.
6. **Developing a system of symptom-based treatment and standardized supply at Puskesmas Pembantu** is another method for introducing standards of service into the health care system. By training paramedics in clear guidelines for diagnosis of the principal health problems treated in the Puskesmas Pembantu, and by providing a standardized supply of drugs for these key problems, this intervention addresses two key needs. First, it promotes effective care and supply for problems that can be treated by staff assigned to Puskesmas Pembantu. Second, it defines a "built-in" referral system that proceeds from these auxiliary units to the main Puskesmas.
7. **Developing of regional supervisory systems for drug management and drug use** provides structural support for interventions to improve the quality of drug use and management. This process also involves developing criteria and a flow of information for measuring and monitoring the quality of medical and pharmaceutical services.
8. **Promoting improved community management of ARI and diarrhea, and awareness of MOH drug programs** supports all activities to improve prescribing practices by educating the public about rational drug use, especially in priority areas in the training for prescribers. Pilot interventions could use mass media communications or campaigns mounted through community organizations to deliver these supportive messages.

Designing and implementing an intervention involves creating a **methodology**, as well as **supportive materials**. These two components become the basis for sustaining and expanding the pilot interventions.

C. PRIORITY AREAS FOR INTERVENTION

The focus assessments were necessarily large in scope, since they aimed to uncover all relevant information about the pharmaceutical sector. The study findings provide information changes to the drug

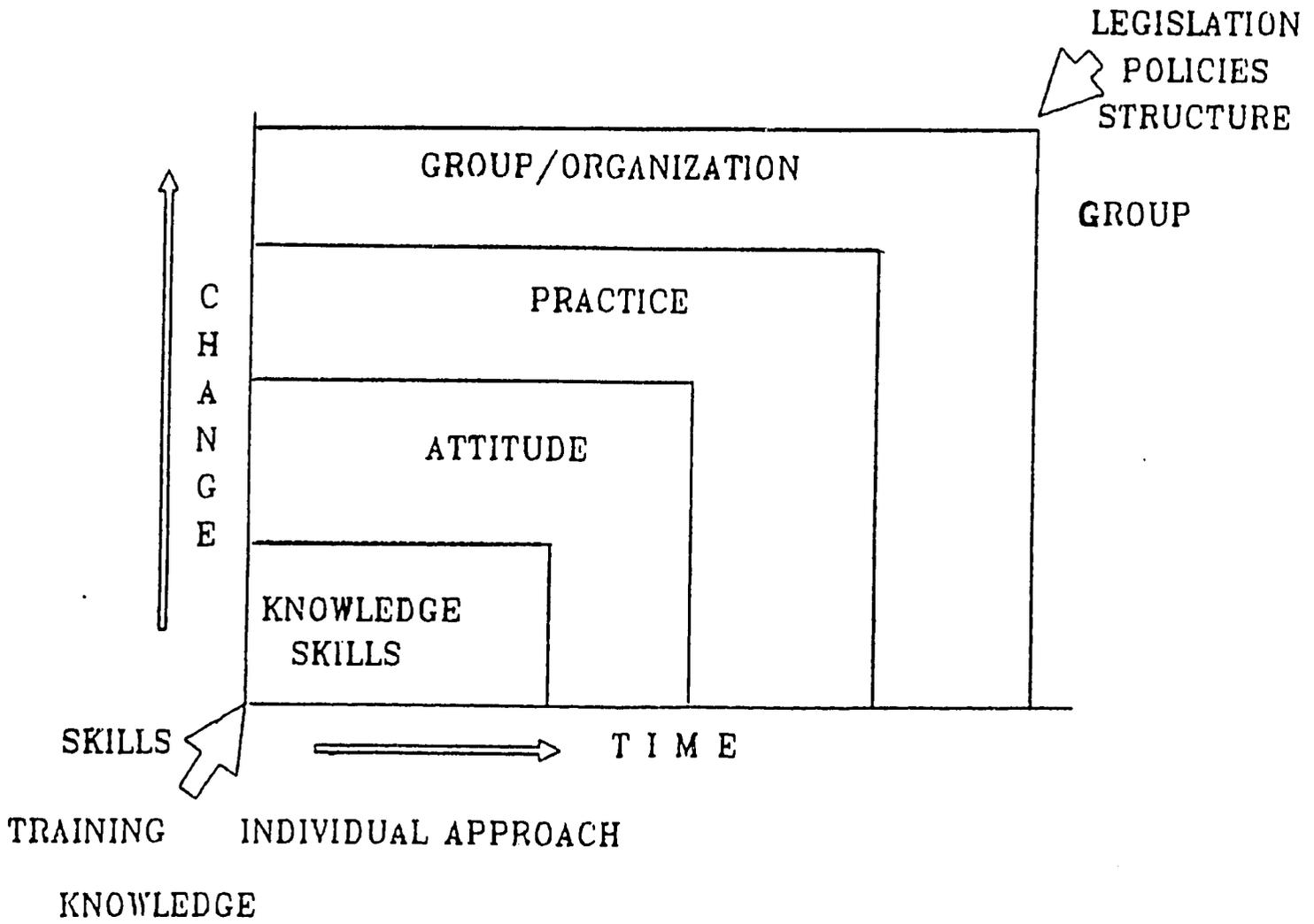
use and management system. The previous discussion of structural modifications in drug use and management presented the structural foundations that would support an ideal system of rational and cost-effective drug use and management. The proposed interventions build on this foundation to design intervention packages. Using this foundation as a base, the next step is to elaborate criteria for establishing project priorities and guidelines for the development of an intervention strategy.

In the project paper for the HSFP project, three global criteria are specified for the evaluation of project success. These three goals are:

1. **Social Financing:** The evaluation will ascertain the number of members who have been enrolled in third party pre-paid health insurance plans which conform to the principles of DUKM. The evaluation will also assess the degree to which the Health Insurance Coordinating Board is operating as an intersectoral body to accredit health insurance plans which conform to the principles of DUKM.
2. **Hospitals:** The evaluation will measure the extent to which public sector subsidies to the government hospitals in demonstration areas have been reduced through the efficiency and cost recovery measures introduced through the project. Baseline measurements of public sector subsidies to the hospitals in three study provinces will be made prior to the demonstration of project efficiency and cost recovery measures. The final evaluation will compare post-intervention subsidies to pre-intervention subsidies in the three demonstration provinces.
3. **Pharmaceuticals:** The evaluation will measure the internal allocative efficiency of public pharmaceutical expenditures in study districts to ascertain whether:
 - pharmaceuticals are being more rationally prescribed;
 - expenditures for the different therapeutic categories have been changed to reflect internal allocative shifts within the drug budget; and
 - whether larger expenditures are being made on pharmaceuticals such as vaccines, ORT, vitamin A and iron folate which directly support child survival programs.

Start with areas where change will produce the largest impact and for which the most complete information exists. To increase the likelihood of success, it seems logical to prioritize those areas where change will be widespread and relatively easy to achieve. Those areas for which the most complete information is available should also be prioritized. Figure 7 presents a strategy for change to realize these goals.

Figure 7 Strategy for Change



From these criteria, two general areas of focus have been identified. These are to:

1. **Focus first on interventions to improve managerial performance, information systems and prescribing practice at the Puskesmas** since these form the core of the behavioral system that determines the supply and use of drugs. As understanding increases during these interventions of the broader environment in which these behaviors take place, and as additional targeted studies are conducted, other types of intervention can be integrated and directed at improved budget development, supervisory systems, drug information, community awareness and the role of the Puskesmas Pembantu.
2. **Focus on ARI, diarrhea, and injections:** ARI and diarrhea are leading causes of illness among children under five and account for over 58 percent of their visits to Puskesmas and 61 percent of their total costs of drug treatment. Inappropriate use of injections in the treatment of these and other conditions is a practice that both wastes scarce resources and carries substantial clinical danger. The treatment protocols for ARI and diarrhea, the required training messages, and useful indicators to measure adherence to these protocols are relatively specific and well-defined. For these reasons, a concentration in intervention and evaluation on quality of treatment and drugs used for these conditions is appropriate. If the methods used to improve behavior in relation to these problems are successful, they should be applicable in the future to other health problems as well. Table 5 presents these three priority areas with their relevance to project objectives of improving prescribing practices and reallocating resources.

Table 5 PRIORITY AREAS FOR INTERVENTION IN DRUG USE

PRIORITY AREAS	RATIONAL PRESCRIBING	RESOURCE REALLOCATION
1. Diarrhea	<ul style="list-style-type: none"> ▪ Leading cause of morbidity, especially for under-fives (prevalence: 158.9 per 1,000 for under-fives); and ▪ Current prescribing patterns are not rational. <ul style="list-style-type: none"> * Only 46 percent receive ORS; * 73 percent receive oral antibiotics; * 26 percent receive at least one antibiotic injection; and * Antidiarrheals are used frequently 	<ul style="list-style-type: none"> ▪ Large proportion of total drug costs <ul style="list-style-type: none"> * 13.3 percent of costs for under-fives; and * 7.3 percent of total costs ▪ Antibiotics represent two-thirds of cost ▪ By using standard treatment protocols <ul style="list-style-type: none"> * Reduce cost of treatment; and * Reallocate resources toward child survival pharmaceuticals, i.e., ORS.

2. ARI	<ul style="list-style-type: none"> ■ Leading cause of morbidity, especially for under-fives (prevalence: 420.5 per 1,000); and ■ Current prescribing practices are not rational. <ul style="list-style-type: none"> * Antibiotics frequently used for mild ARI (86 percent for under-fives); * 28.1 percent receive an antibiotic injection; and * 53 percent receive at least one injection 	<ul style="list-style-type: none"> ■ Large proportion of total drug costs <ul style="list-style-type: none"> * 46.8 percent of costs for under-fives. * 28 percent of total costs; and ■ Significant savings result from use of standard treatment protocols <ul style="list-style-type: none"> * Actual costs of treating under-fives is four times standard treatment costs; for five-and-over population, average costs are 2.5 times higher.
3. Injection Use	<ul style="list-style-type: none"> ■ Frequent use of injections without medical indication <ul style="list-style-type: none"> * 43 percent of under-fives receive at least one injection; and * 55 percent of patients five yrs. and over receive at least one injection 	<ul style="list-style-type: none"> ■ Injectables are more expensive than oral medication, on average

CHAPTER 6 RECOMMENDATIONS FOR THE KAP STUDY

A. INTEGRATED ANALYSIS FINDINGS

This section summarizes the research questions identified in the integrated analysis and their relevance for the Knowledge, Attitude and Practice study. The KAP study is the last of the focused assessments. The findings from the previous studies can be used to refine its objectives and increase its usefulness for intervention design.³

³ Previous documents relating to the development of the KAP study are:

1. Bates, Holtzman, Quick, Ross-Degnan, Visser, *Detailed Design of Focused Assessment*; and
2. Maran, *Research Plan for KAP study of Prescribers, Dispensers and Consumers of Drugs*, as well as protocols of initial SMS study and YIS questionnaires for prescribers.

Table 6 displays a matrix of focused assessment findings and implications for the KAP study in relation to drug management and use in the Puskesmas.

**Table 6 RESEARCH QUESTIONS FOR THE KAP:
MANAGEMENT AND USE AT PUSKESMAS**

FACTOR	FINDINGS FROM FOCUSED ASSESSMENTS	RESEARCH QUESTIONS FOR KAP
Management of Drug Supply	<ul style="list-style-type: none"> ▪ Stock-outs are frequent. ▪ Supply is inadequate. ▪ Delivery is not systematic. 	<p>PROVIDERS</p> <ul style="list-style-type: none"> ▪ How does supply influence prescribing when: <ul style="list-style-type: none"> * key drugs are out of stock? * key drugs are at low stock levels? * there is an oversupply of certain drugs? <p>DISPENSERS</p> <ul style="list-style-type: none"> ▪ What are procedures when supply is low or out? ▪ Do dispensers understand principles of stock management? <p>PATIENTS</p> <ul style="list-style-type: none"> ▪ What are other sources of drugs when drugs are not available at the Puskesmas?

FACTOR	FINDINGS FROM FOCUSED ASSESSMENTS	RESEARCH QUESTIONS FOR KAP
<p>Manpower and Organization of the Puskesmas</p>	<ul style="list-style-type: none"> ▪ Doctors are busy with administrative duties. ▪ Paramedics do most of prescribing. ▪ Dispensers are not adequately trained. ▪ Pressure on health unit to maintain/increase coverage. 	<p>PROVIDERS</p> <ul style="list-style-type: none"> ▪ Is pre-service training adequate? ▪ Is in-service training adequate? ▪ What is supervision structure in Puskesmas? ▪ How are Puskesmas supervised? What are criteria for measuring performance? ▪ How important is income of Puskesmas? <p>DISPENSERS</p> <ul style="list-style-type: none"> ▪ Is pre-service training adequate? ▪ Is in-service training adequate?
<p>Policies</p>	<ul style="list-style-type: none"> ▪ Reference books are not always available in health units. ▪ Policies are not clearly understood by prescribers, especially drug policies. ▪ Paramedics do not have assured access to materials sent to the Puskesmas. 	<p>PROVIDERS</p> <ul style="list-style-type: none"> ▪ What is knowledge of policies and standards relating to priority project areas? (ARI, diarrhea, generic drugs) ▪ Are available reference materials used? ▪ What are attitudes toward policies and standards? <p>PATIENTS</p> <ul style="list-style-type: none"> ▪ What is knowledge of policies and standards relating to priority project areas? ▪ What are attitudes towards policies and standards?

FACTOR	FINDINGS FROM FOCUSED ASSESSMENTS	RESEARCH QUESTIONS FOR KAP
Treatment of Diarrhea	<ul style="list-style-type: none"> ■ Treatment of diarrhea does not correspond with standard treatment formulated by MOH. In particular: <ul style="list-style-type: none"> * ORS is given to less than half of cases; * Antibiotics are used for most cases; and * Antidiarrheals are given frequently. 	<p>PROVIDERS</p> <ul style="list-style-type: none"> ■ What is knowledge of standard treatment? ■ What are attitudes of standard treatment? ■ What is rationale for not prescribing ORS? ■ What is rationale for prescribing antibiotics? <p>PATIENTS</p> <ul style="list-style-type: none"> ■ What is knowledge of condition? ■ What is knowledge of treatment? ■ What are expectations for treatment?
Injection Use	<ul style="list-style-type: none"> ■ Injections are overused. <ul style="list-style-type: none"> * Injections are given when they are not indicated medically (antibiotic injections, vitamin injections, antihistamines). ■ Correct sterilization procedures are not followed. 	<p>PROVIDERS</p> <ul style="list-style-type: none"> ■ What is knowledge about injections? ■ What are attitudes about injections? ■ What is rationale for using injections for treatment of ARI and diarrhea? <p>PATIENTS</p> <ul style="list-style-type: none"> ■ What is knowledge about injections? ■ What are attitudes towards injections? ■ Do patients request injections?

FACTOR	FINDINGS FROM FOCUSED ASSESSMENTS	RESEARCH QUESTIONS FOR KAP
Antibiotic Use	<ul style="list-style-type: none"> ▪ Antibiotics are overprescribed relative to need. ▪ Antibiotics are prescribed in sub-therapeutic doses. ▪ Knowledge of antibiotics appeared weak among paramedics. 	<p>PROVIDERS</p> <ul style="list-style-type: none"> ▪ What is knowledge about antibiotics? ▪ What are attitudes toward antibiotics? ▪ What is rationale for using antibiotics, for treatment of ARI and diarrhea? <p>PATIENTS</p> <ul style="list-style-type: none"> ▪ What is knowledge about antibiotics? ▪ What are attitudes toward antibiotics? ▪ Do patients request antibiotics?
Cost Implications	<ul style="list-style-type: none"> ▪ Prescribing behaviors have a strong impact on cost and use of resources. <ul style="list-style-type: none"> * Use of expensive antibiotics; * Use of symptomatic medicine that is not medically indicated; and * Polypharmacy. ▪ Drug cost appeared to have an impact on the providers' judgment about quality. 	<p>PROVIDERS</p> <ul style="list-style-type: none"> ▪ What are diagnostic skills, particularly in relation to ARI and diarrhea? ▪ What are practices routinely followed in the Puskesmas? <p>PATIENTS</p> <ul style="list-style-type: none"> ▪ What is patient's knowledge of diagnosing diarrhea and ARI?
Dispensing	NOT COVERED BY FOCUSED ASSESSMENTS	<ul style="list-style-type: none"> ▪ Do dispensers alter prescription if drug is out of stock or at low stock levels? ▪ What are routine dispensing practices? ▪ Do dispensers give information about drugs? ▪ Do dispensers know what information to give about drugs?

FACTOR	FINDINGS FROM FOCUSED ASSESSMENTS	RESEARCH QUESTIONS FOR KAP
Patient Compliance	NOT COVERED BY FOCUSED ASSESSMENTS	<ul style="list-style-type: none"> ▪ Do patients understand the drugs they are given and how to administer them? ▪ Do patients refill prescriptions after three days? ▪ Do patients take drugs according to instructions?

Drug Management: The influence that supply has on prescribing behavior has not yet been studied in depth. The DMS identified many problems relating to the ordering, procurement and distribution of drugs, which lead to drug shortages and stock-outs at the Puskesmas. The doctors and paramedics who participated in the focus group discussions related the problems created by inadequate drug supply (feeling constrained to prescribe less than a full course of treatment, for example). The following questions need to be answered for the development of interventions:

- What are supply problems for drugs, especially those drugs that will be central to interventions (drugs for treating diarrhea, ARI, antibiotics and injections⁴)?
- What do providers do when these drugs are out?
- How do drug shortages influence amounts given? (There is anecdotal information to suggest that the staff in the Puskesmas pharmacy reduces amounts when supply is low, meaning that DUS estimates on average amounts could be high.)
- Can patients fill their prescriptions in private pharmacies? How often is this solution used when drugs are out of stock?

1. MANPOWER AND ORGANIZATION OF THE PUSKESMAS

The manpower study found that Puskesmas doctors were often too preoccupied with administrative duties to see patients. This finding is confirmed by the DUS showing that paramedics treat a majority of patients (69 percent in Puskesmas and 99 percent in Puskesmas Pembantu).

This finding suggests two principal areas for further study:

1. Organization of the Puskesmas:
 - Does the doctor have time to supervise the paramedics?
 - How is information transmitted within the Puskesmas?

⁴ During the integrated analysis, the Integrated Analysis team discussed drafting a list of key drugs by importance to project goals (drugs used for treatment of diarrhea or ARI and drugs most frequently used in the Puskesmas, for example). This list will be useful for designing the KAP.

2. Provider knowledge, especially among paramedics who do not get training in diagnosing and prescribing.

Another area for further study is the use of lab facilities. The DUS has data on use of lab tests. Use of lab tests was very low, less than one percent of visits to the Puskesmas included in the DUS. The manpower study also found that lab facilities were inadequate.

From the focus group discussions, it appeared that there is sometimes financial pressure on the Puskesmas to collect fees from patients. The fees at the Puskesmas may often be the second or third largest source of income for the local government. If this is so, health center staff may feel pressure to give patients what they request out of fear that alienating the patients would mean reduced revenues. This aspect should be explored further.

2. POLICY REVIEW

The key issues related to policy and regulations that have an impact on the use of drugs are:

- Standard treatment protocols (the "red book" and the "pink book"); and
- National drug policies (list of essential drugs (DOEN), generic drugs and the "blue book").

More information is needed on knowledge of and attitudes toward standard treatments and drug policies. The focus group discussions provide some interesting preliminary information about both topics.

The importance of informal and local policies became clear in the course of the focus group discussions (FGDs) with doctors. The practice of prescribing drugs for three days (the three-day rule), although widespread in Indonesia, is not a written policy. In the FGDs the doctors and paramedics discussed local policies that had an impact on prescribing in their regions.

3. COST IMPLICATIONS

This factor is central to all four focused assessments. Two principal questions are important for the KAP study:

1. What are awareness of drug costs and the importance of cost-effective prescribing?
2. How does the cost of a drug influence perceptions of quality, both for prescribers and patients?

This second question is of particular importance for the generic drug program.

4. DIAGNOSING

The prescribing behavior observed in the DUS suggests a large amount of diagnostic insecurity among prescribers. Since paramedics do not receive formal education in diagnosing, they probably lack basic knowledge about diagnosing. In order to effect change in prescribing behavior, diagnostic confidence will have to improve. For example, paramedics will have to be able to distinguish mild ARI (where antibiotics are not indicated) from moderate or severe ARI (where antibiotics are needed) in order to change current patterns of antibiotic use for ARI. At present, almost all cases receive antibiotics "in

case." Information about current diagnostic practices is needed to design interventions to increase confidence and change practices.

5. DISPENSING

The main question raised by the DUS in relation to dispensing is: Do dispensers change prescriptions if stock is low or the drug is out of stock? Anecdotal information suggests this may happen regularly. From the DMS and the DMP, it was clear that the managers of the dispensary were not trained in drug management. The KAP is a good forum to explore actual knowledge of key principles in drug logistics (such as minimum stock levels and concepts of average consumption) and the possibilities for improving and expanding the role of the dispenser.

6. PATIENT COMPLIANCE

To complement and expand DUS findings, more information is needed about whether patients return to renew their prescriptions after "three days." Some information was collected on return visits in the DUS, but the data available on the medical records was not sufficient to obtain a clear picture. Information on whether patients use other private pharmacies to purchase their drugs would also give a clearer idea of options available when drugs are out of stock.

B. POTENTIAL CONTRIBUTIONS OF THE KAP STUDIES

The focused assessments brought to light a wide array of apparent inefficiencies and constraints to effective drug management and use. During the process of integrated analysis of these assessments, a number of key structural and operational problems that contribute to the current situation have been identified. In order to address these problems, a draft set of recommendations has been developed that calls for:

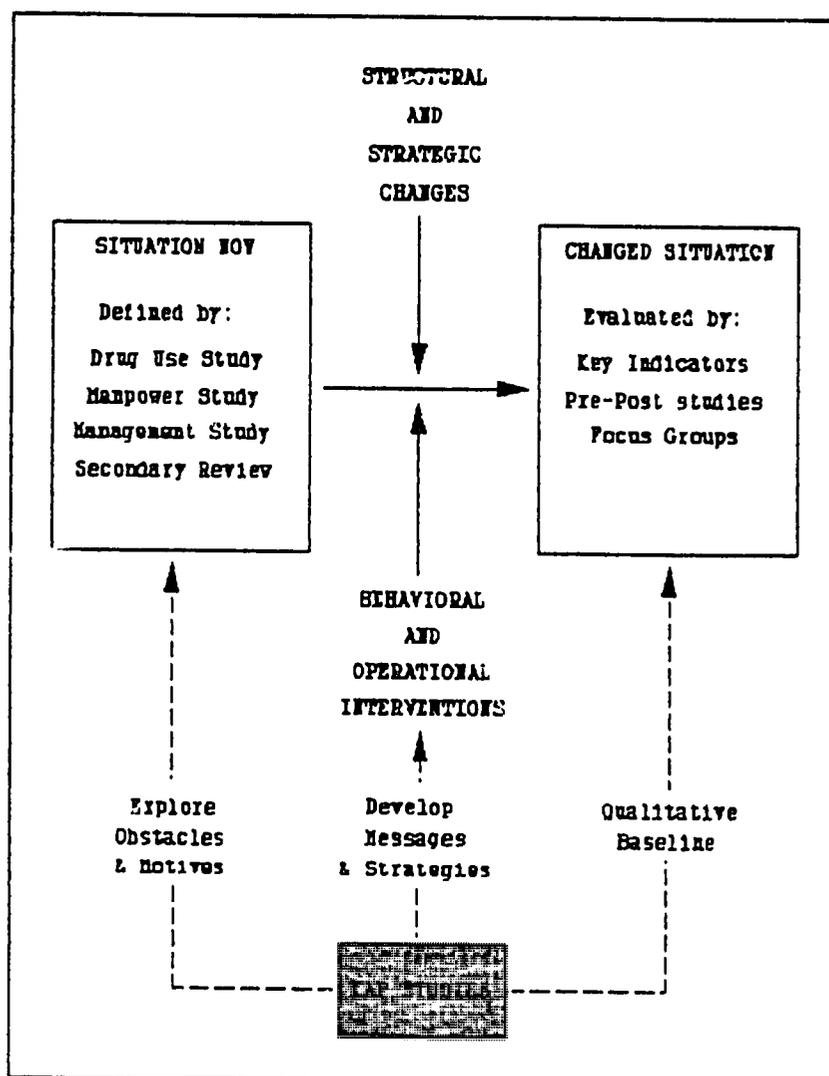
- Strategic changes in regulations, and in the procedures and systems used for budgeting, planning, distributing, and controlling pharmaceuticals in the public sector;
- Reorganization in the responsibilities and functions of key units involved in drug supply at the Kabupaten level;
- Development and implementation of standards for quality in pharmaceutical services and medical care;
- Clarification and implementation of supervisory systems adequate to ensure adherence to these quality standards;
- Development of systems to provide appropriate unbiased information on drugs and drug use to health system personnel and to the community; and
- Provision of community education to support changes in management and use, aimed at increasing understanding of key health problems, and of the role of pharmaceuticals in treating them.

Although the key problems that the Integrated Working Group has addressed have been reasonably well-identified, some of the factors that underlie these problems, and some of the barriers to the anticipated structural and behavioral changes, are less clear. In addition, as the operational interventions move from

the stage of theory to design, there will be uncertainties about which elements to emphasize, and how new behavioral messages will need to be packaged to have the most impact.

The potential contributions of the KAP studies to the change process are presented in a schematic way in Figure 8. First, these studies will help to clarify some of the motivations and incentives that have contributed to the development of key behavioral problems. They will also seek to identify specific constraints to change in behavior. If these constraints are structural, the KAP studies will highlight certain policies or procedures that might need to be changed for specific interventions to succeed.

Figure 8 Contribution of KAP Studies to Intervention Development



In addition to promoting better understanding of the reasons for key problems observed in the focused assessments, the KAP studies will also contribute directly to the design of operational interventions. There are many choices that will need to be made regarding the strategies each intervention will employ:

- Particular target groups;
- Methods by which these groups will be reached;
- Staff who will carry out the intervention; and
- Duration and intensity of activities.

The KAP studies can be used to clarify some of these issues. Since most efforts to change behavior require developing an effective means of communicating with the target groups in terms they can understand, the KAP studies can also contribute to the development of the messages and themes that will be used during the interventions. The language that is used by the various target groups to describe particular problems, and the concepts and images they have in mind, can be explored in-depth in order to develop more focused and persuasive training messages and materials.

Finally, the KAP studies provide an opportunity to gather information on the status of certain characteristics of target groups prior to any interventions. Because the specifics of intervention design are still to be determined, the opportunity to use the KAP studies in this way as baseline assessments is actually quite limited. However, some qualitative characteristics to be explored in the KAP studies might undergo substantial and observable change during the course of the interventions, particularly among Kabupaten-level managers and decision makers in the intervention areas who comprise a relatively small and circumscribed group.

C. METHODOLOGY FOR COLLECTING KAP DATA

1. OVERVIEW OF STUDY ISSUES AND METHODS

There are a variety of methods that might be used to gather different components of the information described. These methods range from the more heavily quantitative, such as close-ended questionnaire surveys, to the more heavily qualitative, such as in-depth interviews. In general, given that quantitative methods are usually used to provide statistically meaningful estimates, they require much larger samples and often take much longer to complete.

As a result of the focused assessments, many of the quantitative parameters related to the problems in drug supply management and drug use are already known to a certain extent. What is most lacking is a glimpse into some of the reasons why these problems are occurring, the factors related to the expectations and motivations of health system personnel and patients, and the interactions between them during the process of care. For this reason, it makes sense for the KAP studies to use methodologies that focus on these areas.

In addition, one of the major issues not addressed by the focused assessments is that of community attitudes and understanding about drugs. Since community receptivity to many of the changes proposed will be one of the key factors determining their success, some larger exploration of community sentiments outside the boundaries of the health system is indicated.

In order to provide some unified focus to both these investigations and the subsequent interventions, it is advisable to focus on the major issues identified by the focused assessments. These issues are:

- **The recognition, diagnosis and treatment of ARI and diarrhea, including the use of ORS, antibiotics, antidiarrheals, and vitamins for these conditions;**
- **The apparent overuse of injections to treat these and other conditions; and**
- **Attitudes toward and use of generic drugs.**

In line with these needs, two contractors have been engaged to carry out separate KAP studies:

1. **The Center for Child Survival (CCS) will carry out a study of the attitudes and motivations of health managers, prescribers and patients, including examining their interactions during patient visits to Puskesmas and Puskesmas Pembantu.**
2. **Survey Research Indonesia (SRI) will append a one-time module of 11 questions related to drug knowledge and drug use to a regular household survey that it conducts in major urban areas of Indonesia.**

The study groups that are to be targeted in these two studies, and an overview of the methods and samples that are proposed to be, included are summarized in Table 7.

Table 7 METHODS AND TARGET AUDIENCES FOR THE KAP STUDIES

TARGET POPULATION	STUDY METHOD		
	Focus Groups*	Structured Observations	Quantitative Interviews
Head of Dinas	2		
Head of GFK	2		
Head of Puskesmas supervision at Dinas	2		
Physicians as managers of Puskesmas	2		
Physicians practicing at Puskesmas	2	30**	
Paramedics at Puskesmas/Puskesmas Pembantu	2/2	40-80**	
Dispensers at Puskesmas	2	40-60**	
Parents of children currently ill with ARI or diarrhea	2		
Community members who are parents of young children	2		2,000***
Adults recently ill with ARI or diarrhea	2		
Patients attending Puskesmas for ARI or diarrhea		400-500**	400-500**

* One focus group with each target group in each of two provinces.

** Data gathered during observation of episodes of care at 15 Puskesmas and 5 Puskesmas Pembantu in each of two provinces.

*** Data collected during a community household survey in two major urban areas, where respondents are screened to be parents of children under five, or recently ill and having sought care, not necessarily restricted to ARI or diarrhea.

2. CCS KAP STUDY IN KABUPATEN AND PUSKESMAS

In order to get the maximum coverage of opinions and issues with the lowest expenditure of resources and the fewest logistic complications, it is proposed that the focus group be one of the two cornerstones of the CCS studies. This technique was used with great benefit in the Drug Use Study, revealing many concerns of physicians and paramedics, and constraints to their behavior, that would not have been apparent from the quantitative prescribing study alone, and which in fact began to explain many of the patterns of drug use observed.

The use of the focus group in this study is in preference to either more heavily quantitative surveys of knowledge and attitudes among physicians and paramedics, or in-depth interviews of prescribers and managers. Quantitative surveys would need to be more exploratory in nature, since the important

questions about many of the key issues have not been adequately defined at this point; they would also be prohibitive because of sample size, and their structured nature would not allow adequate probing of important issues as they arise.

In-depth interviews of managers were used during the DMP and DMS to explore many problem areas; they have not been used thus far with medical service staff. However, the technique is quite time-consuming, and although in-depth interviews allow sophisticated exploration of issues in their complexity, they also demand large numbers of interviews and a high level of analytic capacity to obtain the breadth of coverage of issues possible in focus groups. Given the large number of target groups for the KAP study, and the resource constraints of this project, focus groups are the most promising technique.

There is a feeling that cultural or professional norms might discourage certain focus group participants from speaking freely. Because of this, the CCS team proposes to combine the groups with a semi-quantitative **attitude scaling technique** (Delbecq Method) to provide a chance for equal participation of all members on at least some key issues. The results of these scaling exercises will also form a useful baseline to be compared with repeat measures after the interventions. However, given the uncertainty of changes in the composition of participants, and the relatively low test-retest reliability generally observed with such attitude scales, these pre-post attitude comparisons should not be seen as a primary means of evaluating the impact of interventions.

For prescribers, the CCS focus groups will be able to explore in more depth and detail some of the issues that were raised in the DUS focus groups. For the other target groups — managers, dispensers, patients, and community members — the focus groups can be used to explore complementary issues. As mentioned above, it is more likely in the case of Kabupaten-level managers that the focus group results, both qualitative and semi-qualitative, might serve as useful baseline measures of attitudes.

For each of the target categories listed in Table 7, it is proposed that one focus group be conducted in each of the two comprehensive intervention provinces, West Sumatera and East Java. This will yield a total of:

- eight focus groups dealing primarily with managerial issues;
- six groups with different levels of prescribers; and
- six groups with the various categories of patients and community members.

These groups are proposed to be held within the next three months. The results will be available to feed into the development and refinement of instruments for the second phase of the CCS study, which will take place following the focus group phase.

The second major technique proposed for the CCS studies is that of **structured observation of the process of care** for a sample of patients coming to the Puskesmas or Puskesmas Pembantu for the treatment of ARI or diarrhea. The observations will include:

- Interviews with patients as they enter facilities regarding their reasons for coming, and expectations about the care they will receive;
- Coded observations of the process of care both during the diagnostic process and while drugs are being dispensed; and

- Interviews with the same patients as they leave facilities to see if they understand their health problems and the drugs they received, and to assess their satisfaction with the process of care and with their drugs.

Once again, it is proposed that the study be carried out in West Sumatera and East Java. Prescribers tend to exhibit similar practices from patient to patient, and prescribers who practice together in the same facility often will practice in a similar way over time, both because of shared habits and because they face the same supply situation. However, the environment for prescribing, and consequently drug use practices, can be expected to vary from Puskesmas to Puskesmas, and among Kabupaten. For these reasons, it is most informative to obtain an idea of practices at as many Puskesmas as resources allow, and in a number of Kabupaten.

Given the resources of the study, it is recommended that the sample be drawn from at least 20 facilities in each province, ideally distributed at three or four Puskesmas and one or two Puskesmas Pembantu in each of four Kabupaten. Overall, practices will ideally be observed in a total of 25 to 30 Puskesmas, and 10 to 15 Puskesmas Pembantu.

In each facility, ten or more individuals with ARI or diarrhea should be interviewed and observed as they progress through the system. These diagnoses constitute about 40 percent of cases. For the other patients, only the brief screening interview would be conducted, providing information on demographics, symptoms, and perhaps reasons for coming to the Puskesmas instead of another provider. Limiting patients to those with ARI or diarrhea, and requiring at least ten patients per facility, means that the sample could be collected in one day for a facility with as low as 25 cases per day. For facilities with higher patient volumes, it makes sense to collect data on as many individuals with the target diagnoses as logistically possible during a day at the facility. With a minimum of ten cases per facility, at least 400 individuals with ARI and diarrhea will be interviewed and observed in all.

3. SRI HOUSEHOLD INTERVIEW IN URBAN AREAS

The purpose of the SRI interview study is to gather information from a sizable sample of urban respondents to complement information being gathered at the Puskesmas during the CCS studies. The survey will concentrate on a sample of respondents that includes mothers of children under five, and community members who have recently sought care for a health problem. The sampling frame of the SRI Omnibus Survey, to which this module of questions is being attached, includes segments in Jakarta, Surabaya, Medan, and Bandung. It makes sense for the KAP study to limit the sampling areas to Surabaya and Medan, as allowed, since these urban areas lie within East Java and North Sumatera respectively, two of the six HSFP/P provinces.

With only 11 questions available, the objectives of the SRI Survey need to be both clearly defined and quite limited. There is very little possibility to explore any issues in-depth with this constraint. In addition, with these few questions, it is very important to validate all questions before including them in the survey. For this reason, it may make sense to delay the SRI survey until after the CCS patient and community focus groups have been completed. During these focus groups, draft questions submitted by SRI can be validated as to comprehension and wording. This sequence also opens up the possibility of comparing the results from the focus groups, the subsequent patient interviews, and the interview study.

One of the initial stages of the SRI study is to complete a review of other community surveys that have looked at key areas related to the target conditions and drug use. Diarrheal disease has certainly been the subject of numerous surveys, and perhaps ARI as well. It is less likely that injections, attitudes

about Puskesmas drugs, and generic drugs have been similarly explored. For this reason, it may make sense to limit the scope of the study to these issues.

Since one of the principal interventions that need guidance from the SRI study is improving community awareness about drugs, the goal of the study might be usefully reinterpreted as gathering information to define marketable images and concepts related to the listed topics. If the study questions are carefully enough crafted, and if the target areas for the social marketing intervention include the two urban areas studied, the results of the study might serve as a baseline for measurement of change.

D. TOPICS POTENTIALLY ADDRESSED BY KAP STUDIES

The design, protocols, and instruments for the KAP studies are currently in the early stages of development. Each type of focus group, the observations at health centers, and the interview studies will all seek to answer a different set of questions about motivations and constraints, and to uncover promising messages and strategies for achieving the objectives of the separate interventions.

An overview of the general topics of inquiry to be covered by each methodology is presented in Table 8 below.

Table 8 OVERVIEW OF TOPICS ADDRESSED BY THE KAP STUDIES

TOPICS TO BE ADDRESSED	FOCUS GROUPS WITH VARIOUS TARGET AUDIENCES							AT PUSKESMAS	
	Kapala Dinas	Kapala GFK	Kapala Kulkes	Physician	Para-medical	Dispenser	Community	Observations	Interviews
Role in planning budget and awareness of need for drugs	X								
Current KIS practices and information needs	X	X	X	X					
Need for and barriers to Kabupaten-level drug planning	X	X	X	X					
Need for and barriers to efficient drug distribution	X	X	X	X					
Drug management and stock-outs at Puskesmas and Puskesmas Pembantu				X	X	X			
Supervisory practice now and potential of regional system	X	X	X	X					
Feelings about medical supervision and evaluation				X	X				
Relationship of prescribing practice and drug shortages			X	X	X	X			
Diagnosis and treatment practice for ARI and diarrhea				X	X	X		X	
Poly-pharmacy, use of injections, antibiotics				X	X	X	X	X	

TOPICS TO BE ADDRESSED	FOCUS GROUPS WITH VARIOUS TARGET AUDIENCES							AT PUSKESMAS	
	Kapala Dinas	Kapala GFK	Kapala Kulkes	Ph: sician	Para- medic	Dispen- ser	Commu- nity	Obs- ervations	Inter- views
Patient expectations about and demand for drugs, and compliance				X	X		X	X	X
Sources of drug information and knowledge about generics				X	X	X	X		
Images about drugs, drug therapy, and generics				X	X	X	X		X
Sources of information about diagnosis and treatment				X	X				
Reasons for and location of patient referrals				X	X				
Reasons and locations for seeking care for ARI and diarrhea							X		X
Patient understanding about ARI and diarrhea and drugs							X		X
Prescriber-patient patterns of communication								X	
Adequacy of drug dispensing and injection process								X	
Patient understanding of drugs prescribed and dispensed									X
Satisfaction with service at Puskesmas and Puskesmas Pembantu									X

ANNEX A
 MATRIX OF STUDY RESULTS:
 DRUG USE AND MANAGEMENT
 (HSFP/P)

ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Organization	Institutions Involved: Central: MIA, MOH, POM, BKM, YM, CDC Dati I: Gubernur Kanwil Dinkes I Dati II: Dinkes II Kandep RS RS Puskesmas GFK		- GFK under Kandep, Puskesmas under Bupati (Dinkes).	- Ineffective coordination	Policy Organizational Structure	- Improve structure, linkages coordination on drug supply. *GFK under Dinkes *GFK role in drug supply (planning and control).
	Decentralization (UU 5/74) - Administrator/Governor: Initiative, author, coord. on plan, implementation and finance. Implementor in Dati I & II (PP 7/87, SKMIA): Dinkes I & II.					- Improve supervising role at Dinkes level in drug use.
	- Technical policy and justification maker (SK MOH): POM: classification, scheme, standard, control & evaluation on health facilities, manpower (I MIA), training, drug use, record & report. Vertical Institution: Kanwil, Kandep: guidelines, program development, coord. and evaluation.					

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ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Organization (cont.)	- Technical working unit under Kandep: GFK (SK MOH).					
	- Technical working unit under Dinkes II: Puskesmas					
Manpower	- SK MOH: Organizational Structure	- ISN (Indicator Staffing Needs) 1985: standardized staffing needs based on working load.	- In general staff number was appropriate, except at Puskesmas.	- No detailed individual description on job, authority, prerequisite, guidelines and manuals.	Structural Managerial	- Dissemination of ISN concept as a guideline for personnel need.
		- Personnel Management Information System (ISNIS) - 1989: annual requirement on staffing need by each unit, collected by Bureau of Planning.	- Qualification: Dati I & II: adequate Puskesmas: inadequate RS: varies Gaps between Gol II and III+ Problems more managerial than technical.	- No relation between organizational goal and individual target and performance.		- Develop detailed organizational framework. - Develop more effective manpower policies, job requirements and job descriptions to improve motivation and job satisfaction.
			- Prerequisite: More administrative than educational/ experiences.	- Lack of preservice training for Gol II.		- Develop working plan and standard performance.
				- Training & development: More for chiefs: conceptual aspect. Difficult replacement for staffs on leave.	- Functional recruitment was not established.	Managerial Structural

ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Manpower (cont.)			<ul style="list-style-type: none"> - Job descriptions: Found only at Balai POM & GFK. More descriptions of function and task. Lack of implementation. No structural in-job training. 			
			<ul style="list-style-type: none"> - Environment: Inadequate facilities, especially Puskesmas, GFK. Little access to professional publications, manuals and guidelines. 			<ul style="list-style-type: none"> - Improve quality and distribution of printed materials for prescribers.
			<ul style="list-style-type: none"> - Good motivation and communication. 			
		<ul style="list-style-type: none"> - Health personnel prod.: Dr., Pharmacist under MO Education. 	<ul style="list-style-type: none"> - Form T1 (Pusat Data Kes.): 75% MOH's staffs; 20% MIA's staffs; and 5% others. 			
		<ul style="list-style-type: none"> - Paramedics under MOH (Pusat Pendidikan Tenaga Kesehatan). 	<ul style="list-style-type: none"> - MOH's staffs: 55% MOH pusat Jiperbantukan, 32% MOH pusat, 9% MOH pusat dipekerjakan. 			
			<ul style="list-style-type: none"> - ISN was useful for short-term plan training plan. 			

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ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Manpower (cont.)		- Paramedics recruitment is MOH priority in Pelita IV.	- ISN 1987: needs more 22% GP, 27% pharmacist, 50% non-medical paramedics, 1.5% medical paramedics.	- Inadequate long-term plan between staffing needs (ISN '87) and production; and between staffing needs and allocation.	Structural Policy	
			- ADSP-1988: Medical paramedics: needs 686, graduate 14649; Non-medical paramedics: needs 14828, graduate 8061.			
	- UU 6/83: Dr./Pharmacist need working licenc. from MOH.		At Puskesmas: - Patients treated by paramedics vary: 76%; 69% at Puskesmas; 99% at Puskesmas Pembantu. For -5 at the same percentage (Puskesmas and Puskesmas Pembantu).	- Paramedics' role in diagnosing and treatment.	Technical	- Training. - Policy evaluation.
	- UU 6/83: Paramedics Task depends on training and experience. Work under Dr./Pharmacist supervision.			- Dr. occupied by administrative work. - Lack of Dr. supervision.	- Heavy administrative working load.	Structural Managerial

ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Manpower (cont.)	- F MOH: Exception, without direct supervision of doctor: Bidan.		- No large differences in the profile of health problems treated by Dr. and non-Dr, though Dr. treated smaller proportion of skin diseases and more chronic resp., hypertension.			
	- INMENDAGRI: Dr., Dentists and Paramedics have two types of preservice trainings: general and special training.		- At Puskesmas: lack of drug professionals (assistant pharmacist) despite several numbers of prescriptions.			
		- BKM Guidelines: Drug delivery at Puskesmas is carried out by assistant pharmacist or Juru Obat with capability in reading prescription, dispensing and giving information to patient.				
			AT RS: - Patients treated by Dr.	- Dr. role in prescribing habit.	Behavioral	- Training
			- Number of Personnel > PKM.			- Development of communication materials (KAP).
			- Minimal one pharmacist at each RS.			

ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Planning	<ul style="list-style-type: none"> - INMENDAGRI - SK MOH - INPRES NO. 6/1984 <p>Evaluation and final drug requirement for List A, B1, B2 each Dati II. Contracting on procurement.</p>		<ul style="list-style-type: none"> - Drug list availability according to the budget. 		<ul style="list-style-type: none"> - Managerial Structural 	<ul style="list-style-type: none"> - Evaluate and improve National Drug Supply Management.
Procurement	<ul style="list-style-type: none"> - SK MOH: List A, B1, B2 are supplied by government-owned companies. Price negotiation. - SE POM: SPK starting April. 		<ul style="list-style-type: none"> - No information of drug stock levels at GFK. 	<ul style="list-style-type: none"> - Terms of delivery based on request but do not answer the real needs. 	<ul style="list-style-type: none"> Managerial Structural 	<ul style="list-style-type: none"> - Training strategies for most cost-effective procurement.
Planning	<ul style="list-style-type: none"> - INMENDAGRI: - Evaluation preplan Dati II <p>Minimal budget for A, B1, B2, is 80%.</p>		<ul style="list-style-type: none"> - Inadequate time. - Budget allocation plan was available in April. 	<ul style="list-style-type: none"> - Unable to function in controlling and supervision. 	<ul style="list-style-type: none"> Technical Structural 	<ul style="list-style-type: none"> - Rescheduling planning activities, including distribution frequency and time.
	<ul style="list-style-type: none"> - SK MOH: Justification based on list, budget allocation each Dati II, price HJD and HPT. 					
	<ul style="list-style-type: none"> - SE POM: Compilation is sent to Pusat before 20 March. 	<p>PROCEDURE:</p> <ul style="list-style-type: none"> - Horizontal: planning on List C and APBD drugs. - Standard Therapy. - Disease Pattern. 				

ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Procurement	-INMENDAGRI: - Selection through appointment or tender for List C. - Contract: mid-June.		- Contracting for A & B drugs in June at the latest. - Contracting for C differs among regions.			
	-SE POM: SPK starting April.		- Supplies do not always meet the needs.	- Quality service not adequate.		
				- Weak planning led to Procurement that does not meet the needs at time.	Technical Managerial Structural	- Develop guidelines.
Planning	- INMENDAGRI: - Evaluation based on List A, B1, B2&C, budget estimation and drug use stock; considered morbidity pattern. Compilation is sent to Dinkes I until end of May.	- GUIDELINES from Dinkes I: frequent request and schedule for planning. - POM GUIDELINES: Annual planning.	- Bottom-up process. - Improper coordination resulting in inadequate time for "planning." - Incomplete data from Puskesmas.			

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ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Planning (cont.)	<ul style="list-style-type: none"> - SK MOH - INPRES NO. 6/1984 	<ul style="list-style-type: none"> - PROCEDURE: Horizontal: planning on APBD drugs. 	<ul style="list-style-type: none"> - Planning was conducted by project team (ad hoc). - Each source of budget has different project team. - Various sources of budget - Inpres is major contribution. 	<ul style="list-style-type: none"> - Scheduling of drug plan. - Inefficient communication. - Discipline - Different annual team member (every year) impede past experience/under- standing on drug need. - No comprehensive feedback (of drug use). - No integration of drug planning. 	<ul style="list-style-type: none"> Structural Managerial Structural Structural 	<ul style="list-style-type: none"> - Direct intervention: improve coordination and method. - Training on needs quantification (e.g., DEM). - Provide complete data — at least two- year data. - Evaluation of policy, involving GFK, Binkemas and Yanmed Dati II. - Policy in Dati II planning.
	<ul style="list-style-type: none"> - STANDARD THERAPY - MORBIDITY PATTERN 		<ul style="list-style-type: none"> - Not utilized. - Not utilized. 	<ul style="list-style-type: none"> - Technical capability. - Technical capability. 	<ul style="list-style-type: none"> Technical Technical 	<ul style="list-style-type: none"> - Training. - Training.
	<ul style="list-style-type: none"> - 'NMENDAGRI: - Selection through appointment of tender for List C. Technical guidelines on QA and price (List C) are made by POM. - Budget: APBD II, Inpres. - SE POM: SPK starting April. - SK MOH '83: Procurement by GFK. 	<ul style="list-style-type: none"> - POM GUIDELINES: Procurement and QA for GFK. 	<ul style="list-style-type: none"> - Receiving team received drug in several packages. - 80% received in December. - Not available (not through GFK). 	<ul style="list-style-type: none"> - Availability of drugs impaired. 	<ul style="list-style-type: none"> Technical Structural 	<ul style="list-style-type: none"> - Direct intervention. - Rearrangement of supply. - Evaluation and redesign of MIS to track drug supply and utilization by Kabupaten on an institutional and per- capita basis. - Procurement analysis by GFK and feedback.

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ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Distribution/ Storage	<ul style="list-style-type: none"> - INMENDAGRI: - Conducted by Dinkes II team (including drug acquisition at GFK) according to Dati II needs. - QC refers to MOH technical guidelines. 	<ul style="list-style-type: none"> - POM GUIDELINES: - Task and function of GFK ed. by Kandep. - Drug management at GFK is chaired by pharmacist. - Provide information on drug management. 	<ul style="list-style-type: none"> - Different concept and problems faced by GFK. - Drug acquisition: - No schedule. - Four times a year, items were completed within four to eight months. 	<ul style="list-style-type: none"> - Difficulties in performance and assessment. - Create stock-out when most needed. 	<p>Managerial Technical</p> <p>Managerial Technical</p>	<ul style="list-style-type: none"> - Development of guidelines. - Training.
	<ul style="list-style-type: none"> - Drug storage by GFK. - Inventory control by GFK. - Recording and reporting by GFK. 	<ul style="list-style-type: none"> - PROCEDURE - GFK is requested to supply drugs to Puskesmas according to Puskesmas requirement and annual allocation. 	<ul style="list-style-type: none"> - Inadequate budget for distribution (not justified to geographical aspect and various available transportation). 	<ul style="list-style-type: none"> - Distribution follow budget. - Puskesmas was not geared towards different distribution system. 	<p>Managerial Technical</p>	<ul style="list-style-type: none"> - Budget evaluation. - Evaluation of distribution system.
	<ul style="list-style-type: none"> - SK MOH: - GFK's task: Procurement. Drug distribution. Efficacy and quality control. 		<ul style="list-style-type: none"> - In practice Puskesmas was not able to organize drug requirement. Requirement was based on average use to simplify estimation. 	<ul style="list-style-type: none"> - Puskesmas was not designed for drug requirement, supply. 		

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ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Distribution/ Storage (cont.)			<ul style="list-style-type: none"> - GFK could not evaluate drug use and requirement from Puskesmas. - Data on drug use and stock in Puskesmas was not made available for GFK. - Inadequate stock monitoring. - Stock-outs spread out along the year with 2 peaks at PKM and 1 peak at GFK. 	<ul style="list-style-type: none"> - GFK not yet functioning in controlling drug availability. - Difficult to supervise stock at Puskesmas. 	Technical Structural	<ul style="list-style-type: none"> - Evaluate and redesign MIS to support the function of drug management at Dinkes II and GFK. - Regular review of drug order received from Puskesmas and RS and management feedback to decision makers and Puskesmas/RS.
			<ul style="list-style-type: none"> - Inadequate storage capacity (drugs volume). 	<ul style="list-style-type: none"> - Standard design for facility does not meet Kabupaten needs. 	Policies Standard	<ul style="list-style-type: none"> - Improvements in storage facilities, inventory management, security and administration quality control programs at GFK.
			<ul style="list-style-type: none"> - Inadequate Inventory Control 	<ul style="list-style-type: none"> - No Standards 	Technical Managerial	<ul style="list-style-type: none"> - Develop stock standard. - Develop control system.
			<ul style="list-style-type: none"> - Inefficient recording and reporting system. 		Technical	<ul style="list-style-type: none"> - Training.
			<ul style="list-style-type: none"> - Role and function just to keep GFK administration. 			

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ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Planning (Drug selection and estimation)	- INMENDAGRI: Annual planning is proposed by health service unit to Dinkes II.	- BKM GUIDELINE: - Monthly planning for internal use including drug received, drug used, drug stock, number of visits and disease pattern.	- Based on experience. - No comprehensive method. Individual interpretation.	- Morbidity data was not used. - No single applicable method.	Technical Technical	- Training. - Development of method and manuals in relation with recording and facilities.
		- DINKES II GUIDELINE: drug estimation. - INPRES DRUG LIST: drug "selection" (164 items).	- Great deviation of 40 indic. drugs between Dr. planning and drug use: Deviation: Drug: < 20% 28% 21% - 80% 38% > 80% 34% - Planning period: April-March. Use period: August-July.			
Procurement	- INMENDAGRI: Drug requirement outside the list needs permission from Kakanwil.	- BKM GUIDELINE: No self-procurement. - PROCEDURE: PHB procurement is not through Inpres.	- Uncertain lead time; drug items were completed within 4-8 months. - Average amount: 77 items.	- No policy on average stock target.	Policy Managerial	

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ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Distribution/ Storage		<ul style="list-style-type: none"> - BKM GUIDELINE: - Physical examination on drugs arrived - Monthly (or cito) distribution from Gudang Obat to Kamar Obat, Jabo, patient service, PP, PK, Posyandu (subunits). - Drug request from Puskesmas Pembantu: disease pattern, number of visits, health program, monthly overstock, and monthly drug use. Special room for drug storage: safety 	<ul style="list-style-type: none"> - Drugs not always available. stock-out: 9 items (11.6%). - Inadequate budget for drug distribution. - Drugs space was not planned considering the volume. 	<ul style="list-style-type: none"> - Distribution budget equal for each place. 	Structural Policy	<ul style="list-style-type: none"> - Evaluate budget to meet the need. - Improvements in physical conditions and security at storage and dispensing facilities.
			<ul style="list-style-type: none"> - No standards for storage facilities. - Inventory control was based on average high frequency of stock-outs. 	<ul style="list-style-type: none"> - Lack of drug storage facilities. - Inadequate IC method. 	Structural Technical	<ul style="list-style-type: none"> - Development of standard design. - Training. - Development of manuals.

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ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Recording and Reporting		<ul style="list-style-type: none"> - BKM GUIDELINES: - Drugs recorded on stock card and acquisition/delivery book. - Drug recording by PKM: Drug requirement to Dati II, drug acquisition from Dati II, drug stored and delivered to subunits. - Drug record by subunits: Drug requirement to PKM, drug acquisition from PK, drug stored, daily use, delivery. - Drug reporting by PKM: LB2 to Kandep and Dinkes II. - Drug reporting by subunits: stock and use. 	<ul style="list-style-type: none"> - Improperly done. 	<ul style="list-style-type: none"> - Ineffective recording and reporting. 	Structural Technical	<ul style="list-style-type: none"> - R&R Improvement to meet management needs.
		<ul style="list-style-type: none"> - MANUAL ON R&R FOR PUSKESMAS. 	<ul style="list-style-type: none"> - Inventory administration: Data incomplete. Archive storage not sufficient. - No drug-dispensing administration. 	<ul style="list-style-type: none"> - Lack of supervision. - Ignorant of use. - Lacking in sufficient code of diseases. - No record. 	Managerial Managerial	<ul style="list-style-type: none"> - Training. - Development of manual/procedure.

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ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Dispensing	- Policy: Professional		- Not available at every Puskesmas.	- Lack of professionals, quality of service.	Structural Policy	- Improvement of job requirement. - Placement of Assistant Pharmacist.
Prescribing Pattern		- Rational prescribing is based on causal diagnosis/disease, not symptoms (BKM guidelines).	<p>- 95% had 1 diagnosis; 5% had 2 diagnoses.</p> <p>- Polypharmacy: mostly 3.5 drugs; 4 or more drugs (50%), at Puskesmas or Puskesmas Pembantu, by Dr. or non-Dr., PHB or non-PHB.</p> <p>- 5: 20% of sample population (varies).</p> <p>- Puskesmas Pembantu tended to prescribe slightly more top 20 drugs.</p> <p>- Drugs prescribed: CTM, Vitamin B complex, Antalgin, Tetracycline, Trisulfa, Parasetamol, Vitamin B1, Procaine Penicillin Injection, Oxytetra injection, and Vitamin C.</p>	<p>- Irrational prescribing.</p> <p>- Ineffective prescribing.</p> <p>- Patient compliance.</p>	Behavioral Technical	<p>- Develop standard diagnostic and treatment guidelines.</p> <p>- Preservice training on standard diagnostic and treatment guidelines.</p> <p>- Training.</p> <p>- Develop policy on limited number of drugs per prescription.</p>

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ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Uses of Injection			<ul style="list-style-type: none"> - Great variability (10-80%) Average: 39% for- 5; 55% for 5+. - Diarrhea: 33% (-5) or <50% (5+) got injection. - ARI: 53% (-5) or 30% (5+) got injection. - 25% got antibiotic injection. - Puskesmas Pembantu: used more regularly. 	<ul style="list-style-type: none"> - Irrational prescribing. - Exposure to risk. 	Behavioral Policy Technical	<ul style="list-style-type: none"> - Effecting change in this practice may be easier since alternative behavioral models already exist. - Training (certain places). - Prescription audit and feedback for injection use.
Use of Antibiotics		<ul style="list-style-type: none"> - Antibiotics are not recommended for diseases that need no antibiotics, such as mild ARI (common cold) and nonspecific diarrhea (red and pink book). 	<ul style="list-style-type: none"> - Antibiotics widely used: 83% (-5) and 59% (5+) got minimum 1 antibiotic. 31% (-5) and 21% (5+) got 2 antibiotics (injection and oral). 	<ul style="list-style-type: none"> - Irrational prescribing 	Technical Behavioral (presc. + com)	<ul style="list-style-type: none"> - Training in use. - Develop policy. - Development of communication materials (KAP).
		<ul style="list-style-type: none"> - Antibiotics are not for prophylactic use and viral diseases (red book). 	<ul style="list-style-type: none"> - Antibiotic most commonly used (% cases): Tetracycline capsule (20%); Trisufa (19%), Procaine Penicillin Injection (12%); Oxytetra (11%); Ampicillin tab. (6%); and Chloram (6%). 	<ul style="list-style-type: none"> - Represent more than need (in cases, not amount). 	Technical	<ul style="list-style-type: none"> - Training. - Prescription audit for antibiotic use.

ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Uses of Antibiotics (cont.)		- Antibiotics should be given in proper doses and amounts for the right indication (BKM guideline).	- Subtherapeutic amounts: For 5+ : 10 caps Tetracycline, 9 tablets Trisulfa, 9 tablets Ampicillin.	- Irrational prescribing. - Improper role (3 days). - Drug stock-out.	Policy Budget	- Evaluate standard: changing limits on quantity prescribed.
		- Duration for antibiotics (at individual treatment in red book): 3, 5-7 days.	- Subtherapeutic doses: 3 days or less rules.		Policy Technical	- Training. - Improve supply.
Cost/ Antibiotic			- Oral antibiotics: almost 50% of total drug cost. - Ampicillin (tablets and syrup): 20%; - Ampicillin (tablets): 13.7%; - Tetracycline (capsules and syrup): 12%; and - Tetracycline (capsules): 10.5%. - 6 out of 10 highest-cost drugs were antibiotics. - Shift to Ampicillin over Tetracycline.		Technical	

ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
R/ARI		<ul style="list-style-type: none"> - Treatment (pink book and CDC yellow book for kader): For mild ARI: supportive, no antibiotics. For moderate ARI: antibiotics. For outpatient. For severe ARI: Inpatient. - Penicillin injection is recommended for children (red book). 	<ul style="list-style-type: none"> - One of the leading causes of morbidity among -5. - Drugs for mild ARI: average 3.8, 60% got 4 or more. - Treatment: large deviations. For mild ARI: antibiotics (oral: 86-75%), analgesics (68-70%), antihistamines (70-61%), cough and cold (36-41%), vitamins. 	<ul style="list-style-type: none"> - Irrational prescribing. - Irrational prescribing (not corresponding with ST): <ul style="list-style-type: none"> * Antibiotic use. * Symptomatic drugs. 	Behavioral Technical Behavioral (presc. + com) Technical (mild ARI)	<ul style="list-style-type: none"> - Development of communication materials (KAP): Recognition Treatment - Training in Standard Treatment. - Prescription audit for ARI.
		<ul style="list-style-type: none"> - Frequency for mild ARI: 80% (CDD). - Preventive (yellow book): education for mother by kader, promoting immunization, health community. - Intervention: change of prescribing habit (pink book). - For planning purpose: cases of mild ARI 90%, moderate ARI 7-9%, severe ARI 1-3%. 	<ul style="list-style-type: none"> - 93% of the cases were mild. 	<ul style="list-style-type: none"> - Diagnostic skills may be weak. 	Technical	<ul style="list-style-type: none"> - Improving diagnostic skill.

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ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Cost/ARI		<ul style="list-style-type: none"> - Rational use of antimicrobials for ARI will decrease drug cost to 1/9. 	<ul style="list-style-type: none"> - Cost category: (1) antibiotics, (2) cold and cough, (3) analgesics. - Cost per case for -5: standard treatment Rp. 153; observed treatment Rp. 512. - Proportion of drug cost: For -5: 64% antibiotics, 20% cough and cold, 13% analgesics. For 5+: 61% antibiotics, 16% cough and cold, 11% analgesics. 	<ul style="list-style-type: none"> - Cost Implication. 	Technical	<ul style="list-style-type: none"> - Training.
R/Diarrhea		<ul style="list-style-type: none"> - Ideal treatment (pink book): 100% ORS, 20% antibiotics. - Recommended where indicated: Tetracycline or Erythromycin. 	<ul style="list-style-type: none"> - 90% (-5) or 75% (+5) of the cases were acute. - One of the leading causes of morbidity among -5. 			<ul style="list-style-type: none"> - Improving diagnostic skill. - Development of communication material for patients (KAP). <ul style="list-style-type: none"> • recognition • treatment

ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
R/Diarrhea (cont.)		<ul style="list-style-type: none"> - Not recommended: spasmolytic anti-diarrhea, antimicrobials and clioquinol. - For planning purpose: diarrheal cases with dehydration: 30%(?). 	<ul style="list-style-type: none"> - 3.45% drugs for acute diarrhea. - Treatment: large deviations. -5: 46% ORS, 73% oral antibiotics; 5+: 36% ORS, 91% oral antibiotics (mostly Tetracycline); and All: 25% antibiotic injection. Frequent antidiarrheal com. and vitamins (46-49%). 	<ul style="list-style-type: none"> - Irrational prescribing. - Less ORS. - Subtherapeutic doses of antibiotics. 	Technical Behavioral Policy	<ul style="list-style-type: none"> - Training in Standard Treatment. - Prescription audit for diarrhea.
Cost/Diarrhea		<ul style="list-style-type: none"> - 46% of total drug cost needed for children is for diarrheal treatment (96% in private, 4% in public sector). 	<ul style="list-style-type: none"> - Standard treatment cost slightly lower than observed treatment cost. 	<ul style="list-style-type: none"> - Slightly cost implication. - Less ORS. - Subtherapeutic doses of antibiotics. 	Technical	<ul style="list-style-type: none"> - Training.
		<ul style="list-style-type: none"> 44% of cost (88% of diarrheal cost) is for non-rehydration drugs (Tetracycline and clioquinol). 	<ul style="list-style-type: none"> - Proportion of drug cost: For -5: 60% antibiotics, antidiarrheals and spasmodics, 13% ORS, 7% vitamins. For 5+: 65% antibiotics, antidiarrheals and anti-spasmodics, 9% ORS, 3% vitamins. 			

ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Cost/Diarrhea (cont.)		- Savings: 51% , if 20% cost for antibiotics. 34% . if clioquinol not used. 30% . if using rational infus. Total 80% for rational use.				
R/Skin			- Leading health problem.		Behavioral	- Training.
Cost/Skin			- NA			
Morbidity			- For -5 (per 1,000 cases): ARI (420.4); skin (176.8); diarrhea (158.9).			
			- For 5+ (per 1,000 cases): ARI (202.6); skin (143.3); chronic respiratory disease (91.2); GI (81.6); muscl. (54); diarrhea (50.5).			
			- Similar between Puskesmas and Puskesmas Pembantu, except Puskesmas Pembantu treated more skin and fewer ARI and diarrhea cases.			

ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Cost/ Morbidity			- All: ARI, diarrhea and skin diseases accounted for 40% of cases and 43% of cost.			
			- Drug cost by health problems. <ul style="list-style-type: none"> * for -5: 47% ARI; 14% diarrhea; 13% skin disease. * For 5+: 24% ARI; 14% skin disease; 10% chronic respiration; 6% diarrhea. - Drug cost per visit was becoming less.			
Planning (Drug selection and estimation)	<ul style="list-style-type: none"> - SK MOH: National Essential Drug List 1987. - P MOH (1989): Generic prescription at government-owned health facilities. - Outside list should be under Director's permission. - Pharmacy and therapeutic Committee: clinical evaluation. 	<ul style="list-style-type: none"> - Carried out by committee (INPRES). - Hospital Formulary: based on criteria for selection of essential drugs. - Development of Pharmacy and Therapeutics Committee. 	<ul style="list-style-type: none"> - Nonessential drugs also available; too big range of drugs at RS C&B (270-520 items). - Fluctuation of drug stock-outs - Factors influencing drug amount: projected visits, population, number of Drs., available budget, population growth, stocks, last year use, last year need +10%, type of service. 	<ul style="list-style-type: none"> - Weak drug planning and inventory control. - Ineffective implementation on drug selection. 	Policy Structural Policy Structural	<ul style="list-style-type: none"> - NEDL revision. - Improve supervision. - Training.

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ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Planning (Drug selection and estimation) (cont.)			<ul style="list-style-type: none"> - Factors influencing drug type/item: disease pattern, last year item, cases found, standard treatment, personal experience, guideline, type of service, medical development. 			
	<ul style="list-style-type: none"> - Budget sources: APBN APBD I APBD II INPRES 		<ul style="list-style-type: none"> - APBN and APBD I: for RS B&C; APBD II and INPRES: for RS D. 			
			<ul style="list-style-type: none"> - Planning and procurement was carried out by Pharmacy Installation. RS D: monthly; RS B&C: three monthly. Plan was evaluated by Director and submitted to Dinkes II (RS D) or Dinkes I (RS B, C). 			
Procurement		<ul style="list-style-type: none"> - Conducted through committee. 	<ul style="list-style-type: none"> - RS D self-procurement for APBD II drugs. - RS B&C: self-procurement. - Administration differs from hospital to hospital. - Average drug amount: 300 items. - Average stock-out: 14-26 items. 	<ul style="list-style-type: none"> - No standard. 	Managerial Structural	Development of MIS systems.

ACTIVITIES	POLICIES	PROCEDURES/ GUIDELINES/ MANUALS/ STANDARDS	IMPLEMENTATION/ FINDINGS	PROBLEMS	AREA	POSSIBLE INTERVENTIONS
Distribution/ Storage	Not clear.		<ul style="list-style-type: none"> - Distribution not under control of pharmacy. - Distribution from Gudang Instalasi Farmasi to: Apotik based on weekly request (by Apotik personnel). - Wards (by paramedics). - Average storage space was adequate. 	<ul style="list-style-type: none"> - No supervision. 	Managerial Structural	<ul style="list-style-type: none"> - Improvement of organization. - Development of hospital pharmacy.

ANNEX B
SCOPE OF WORK FOR INTEGRATED ANALYSIS
OF FOCUSED ASSESSMENT STUDIES

BACKGROUND

The purpose of the HSFP's Pharmaceutical component (PIO/P) is to design interventions which lead to more rational drug planning, selection, procurement, prescription, and use. The major planned outputs are reforms in the way pharmaceuticals are ordered, managed, prescribed, and distributed, which will result in improved efficiency and more resources available for essential drugs that have an impact on child survival.

The overall strategy is to conduct focused assessment studies to identify major problems in the above-identified areas and to use the results for the formulation of interventions. Intervention packages will be implemented in selected provinces and evaluated to determine their effect.

The PIO/P has conducted focused assessment studies on drug management and manpower that cover the areas of pharmaceutical planning, product selection, procurement, storage and distribution. The results are now being analyzed and used for the formulation of interventions. A Drug Use Study is currently being implemented to analyze and characterize prescribing patterns at the Rumah Sakit and Puskesmas, compare actual prescribing with standard treatment protocols, collect representative prescription data that can be used for project evaluation, identify some of the factors that influence prescribing, and recommend the most cost-effective interventions to improve prescribing. A study protocol is currently being developed for a KAP survey of prescribers, dispensers, patients and managers. The results from this survey will be used to design a program of pragmatic interventions aimed at providers, managers and patients that will lead to improved management and more rational drug use.

The subject of this scope of work is further analysis and integration of the results from the Drug Management Study (DMS), the Drug Manpower Study (MPS) and the Secondary Data Analysis Study (ADSP-I) with the analysis of the results from the Drug Use Study (DUS) to clearly identify priority problems that will be addressed by the KAP as a part of the process for the formulation and design of interventions. These five focused assessment studies were designed to conduct a systematic comprehensive assessment of the pharmaceutical sector. They were originally planned to be conducted simultaneously but have been conducted in phases. Each study has been contracted to different companies. An integrated review of the findings from each study was planned and a Consensus Group was formed to coordinate and monitor the studies. The study results from the DMS and MPS are being integrated and summarized. The current plan is to review the data (findings) from all studies as part of the analysis of the DUS, and conduct a systematic integrated analysis to identify the priority problems which require further study. In particular, there will be a study of the behavioral problems that will be part of the KAP study and the structural problems (e.g., policy, regulation, guideline, organizational, structural and/or technical), for which interventions could be directly designed and implemented.

TASKS

The Team, which consists of the PIO/P staff, long and short-term consultants and two expatriate consultants (one Research Specialist and one Programmer Analyst/Research Specialist), will complete the following tasks: review the data and findings from the DMS, MPS, ADSP-I, and DUS; determine requirements for and complete the systematic integrated analysis of findings; identify the priority structural and behavioral problems; and determine which behavioral problems should be addressed by the

KAP study and which structural problems should be directly used as a basis for the design and implementation of interventions.

ACTIVITIES

In completing these tasks the Team will undertake the following activities:

1. Review existing data and findings from the DMS, MPS, ADSP-I and DUS.
2. Review the proposed research plan for the KAP study.
3. Identify areas and determine requirements for integrated analysis of findings from the focused assessment studies for further identification of behavioral and structural problems in the planning, selection, procurement, distribution/storage and use of drugs.
4. Complete additional integrated analysis and determine priority behavioral and structural problems for each area listed in #3.
5. Identify, for each area, the problems, issues and/or behaviors which require in-depth exploration in the KAP study, and make recommendations for their analysis in reference to the use of the findings in the development of interventions and the design of the KAP protocol.
6. Assist in refining the operational research plan for conducting the KAP study which includes the strategy for field data collection and a plan for data analysis.
7. Work directly with YIS in the integrated analysis of findings from the DUS and other studies.
8. Make recommendations for the design and implementation of interventions for the structural problems identified.

OUTPUTS

In completing these activities, the following outputs should be produced and included in the consultants' report:

1. Summary of pertinent findings from the review of results from the DMS, MPS, ADSP-I and DUS.
2. Recommendations for revision of the KAP Research Plan, the Study Protocol and data collection instrument, which include the following:
 - a. Use of findings on behavioral problems in the development of the KAP protocol and possible interventions.
 - b. An appropriate operation research strategy for field data collection and data analysis.
3. A list of areas and requirements for the integrated analysis of findings from the focused assessment studies.

4. Results and recommendations from the integrated analysis of the focused assessment studies for each priority behavioral and structural problem identified in the planning, selection, procurement, distribution/storage and use of drugs.
5. Primary findings and recommendations from the analysis of the DUS data.
6. Recommendations for the design and implementation of interventions for the structural problems identified in the integrated review.

TIME FRAME

The consultants will have one month to complete this assignment. The preferred date for commencing this assignment is March 12, 1990.

COUNTERPARTS

This assignment will be carried out under the auspices of the PIO/P of the HSFP. The consultants will work on a Team composed of the PIO/P long-term national and expatriate consultants, a short-term Research Specialist consultant and POM staff.

TEAM MEMBERS

POM STAFF:

Dr. Linda Sitanggang
Dr. Ria Wydia
Dr. Amir Rivai

PIO/P CONSULTANTS:

Dr. Yos Hudyono, Senior Management Specialist (long-term)
Dr. Reg Gipson, Long-Term Technical Consultant
Dr. Vincent Gan, Research Specialist (short-term)

PROPOSED CANDIDATES FOR EXPATRIATE CONSULTANTS

Ms. Jennifer Zeitlin, Programmer Analyst/Research Specialist
Pharmaceutical Management/Research Specialist, to be recruited

SCOPE OF WORK FOR PROGRAMMER ANALYST AND RESEARCHER

The Programmer Analyst/Researcher, Ms. Jennifer Zeitlin, will work closely with Dr. Linda Sitanggang (POM Staff) and will be primarily responsible for completing the following activities and secondarily responsible for assisting with the team activities listed on page 2 after the activities listed below are completed:

1. Work directly with YIS in the analysis of DUS data.

2. **Identify relevant findings and other information on methodology and data management from the DUS necessary for the assessment of required data for the integrated analysis.**
3. **Complete additional analysis of DUS findings required as a part of the integrated analysis.**