Indonesia

Pharmaceuticals in Health Care Delivery

Mission Report 10 - 23 July 2011

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Contents

Programme Agenda

Sunday, July 10th
Arrive Jakarta

Monday, July 11th **(Jakarta, Java)**
Morning: Briefing by WR and planning the program
National Agency for Drug and Food Control
Afternoon: Directorate of Pharmaceutical Services, MOH
Sub-Directorate Rational Use of Medicines

Tuesday, July 12th **(Jakarta, Java)**
Morning: ASEAN meeting
Directorate General Medical Care
Afternoon: Directorate Public Supply
Health Services Jakarta Province

Wed, July 13th **(Makassar, Sulawesi Selatan province)**
Morning: School of Medicine and School of Pharmacy
Afternoon: Hospital, Medical and Pharmaceutical Associations, PHO

Thursday, July 14th **(Maros District, Sulawesi Selatan)**
Morning: DHO, District warehouse, Puskesmas
Afternoon: District Hospital, Private Retailer

Friday, July 15th **(Jakarta, Java)**
Morning: Department Clinical Pharmacology,
Afternoon: National Referral Hospital

Saturday, July 16th **(Jakarta, Java)**
Morning: Document review
Afternoon: Preparation for workshop

Sunday, July 17th **(Jakarta - Batam)**

Monday, July 18th **(Batam, Kepulauan Riau Province)**
Morning: DHO, District warehouse, Puskesmas
Afternoon: District Hospital

Tuesday, July 19th **(Tg Pinang, Kepulauan Riau Province)**
Morning: PHO, Puskesmas, Private retailer
Afternoon: Private Naval Hospital, Province warehouse,

Wed, July 20th **(Jakarta, Java)**
Morning: Health Insurance companies, Loma Society, PT Askes
Afternoon: Medical and Pharmacy Associations and Councils

Thursday, July 21st **(Jakarta, Java)**
All day: Workshop

Friday, July 22nd **(Jakarta, Java)**
Morning: Debriefing with WR
Afternoon: Writing report of mission

Saturday, June 23rd **(Jakarta - Delhi)**

Acronyms

ABC	ABC analysis – method for measuring drug consumption
ADR	Adverse Drug Reaction
CPD	Continuing professional development
CME	Continuing medical education
CMS	Central Medical Store
DHO	District Health Office
DIC	Drug Information Centre
DG	Directorate General
DRA	Drug Regulatory Authority
DTC	Drug and Therapeutic Committees
DVED	Department of Vaccines, Equipment and Drugs
EDL	Essential Drug List
EDP	Essential Drug Program
EML	Essential Medicines List
EMTD	Essential Medicines and Technology Department
HC	Health Centre
HQ	Headquarters
INN	International Non-proprietary Name
INRUD	International Network for the Rational Use of Drugs
IPD	Inpatient department
MCH	Maternal Child Health
MIC	Medicine Information Centre
MOE	Ministry of Education
MOH	Ministry of Health
MRA	Medicines Regulatory Authority
MSD	Medicines Supply Depot
MTC	Medicines and Therapeutic Committee
NADFC	National Agency of Drug and Food Control
NDC	National Drugs Committee
NGO	Non-governmental organization
NDP/NMP	National Drug Policy / National Medicines Policy
NOL	No objection letter
OPD	Outpatient department
ORS	Oral Rehydration Solution
OTC	Over-the-counter
PHC	Primary Health Care
PHO	Provincial Health Office
Puskesmas	Pusat Kesehatan Masyarakat (Primary Health Center)
Rp	Rupiah (Indonesian currency)
RUM	Rational use of medicines
SOP	Standard Operating Procedures
STG	Standard Treatment Guidelines
TOR	Terms of Reference
VEN	Vital Essential Non-Essential – method for classifying drug importance
WHO	World Health Organization

Executive summary

A visit was made to Indonesia during 10 – 23 July, 2011. The programme was arranged in agreement with the MOH with the TOR to: (1) undertake a situational analysis of the pharmaceutical situation with a focus on drug use, and (2) conduct a one-day workshop with stakeholders to discuss the findings and develop a roadmap for national action. Visits were made to: public health facilities in Sulawesi Selatan and Kepulauan Riau provinces; the major MOH departments concerned with medicines including the Directorate General of Pharmaceuticals and Devices; the National Agency of Drug and Food Control; private retailers; the Medical and Pharmacy Councils and Associations; and the Cipto Mangunkusumo national referral hospital in Jakarta. It was found that Indonesia has an extensive health care system, with substantial infrastructure, trained health care personnel and good health indicators, but that there are a number of serious problems in the pharmaceutical sector concerning drug supply, selection, use and coordination, as highlighted below. However, there are sufficient resources and capacity to address the problems.

Medicines Supply

Since decentralization in 2000, drug supply in the public sector has been managed by local district governments. The District Health Office procures and distributes for all primary care facilities (puskesmas) using, for the most part, a budget supplied from central government. The hospitals do their own procurement using a budget supplied by local government. There was no stock-out of medicines reported in any of the health facilities on the day of the consultant visit. Central MOH and provinces manage buffer stocks for emergencies and MOH still has direct control of drug supply for the vertical disease control programs. Since all districts and hospitals are doing their own purchase there are no economies of scale. There is no electronic drug management inventory system that is common to all districts, so stock control is done manually and quantification is based on past consumption.
It is recommended to establish an electronic drug management inventory system common to all provinces, districts and hospitals to improve stock management and to start a dialogue with provinces and districts to establish pooled procurement first within provinces and then between provinces in order to achieve economies of scale.

Insurance

About 40% of the population is covered by government social insurance and 2% by private insurance. All insurance agencies operate their own reimbursement drug lists, all of which contain more drugs than the national essential medicines list. Government insurance (ASKES, JAMKESMAS and JAMKESDA) reimburses the pharmacist or health facility and not the patient who receives care free at the point of delivery. Cost containment is a problem for all insurance agencies who stated that copayments were not effective because patients and pharmacies would collude to put up the cost of the medicines (by the copayment amount) so that the patient need not actually pay. This was possible as there were no fixed reimbursement prices.
It is recommended that government insurance schemes harmonize their reimbursement lists with the national list of essential medicines or at least with the MOH generic list and fix maximum reimbursement prices for all the medicines on their lists.

Medicines Selection and Consumption

Indonesia has an excellent national EML which is not followed by the private sector, poorly followed by all public hospitals and government insurance, and only partially followed by MOH, which actually follows a generic list (with a greater number of items than the national EML). There is no common electronic drug management inventory system and drug consumption is not monitored. It was found that many of the top 20 drugs by value in health facilities, particularly hospitals, were non-EML drugs and included antibiotics and vitamins.
It is recommended that: (1) every district, hospital and province publish annually consumption data to inform decision-making with regard to drug policy and strategies to promote rational use of medicines; (2) all drug lists within the public sector (insurance lists, MOH's generic list and the national EML) be harmonised, and (3) the national EML be freely distributed to all provinces and districts.

Medicines use

Prescribing data from MOH in 2010 showed serious polypharmacy and high use of antibiotics. The consultant undertook a rapid prescription survey and also found polypharmacy and high use of antibiotics, vitamins and steroids. At the primary care level most drugs were prescribed by generic name and belonged to the EML, but in hospitals and the private sector few drugs belonged to the EML and most were prescribed by brand name. Puyer is a common unsafe practice observed in all facilities, where different drugs are mixed together, pulverized and then the powder divided into separate doses by eye. There are national standard treatment guidelines for puskesmas (PHCs) but they are not used much by doctors. All hospitals are mandated to have a Drug & Therapeutics Committee, but most of them function poorly and are only involved in development and printing of the hospital formulary. Continuing medical education (CME) is adhoc mainly consisting of lectures arranged by the local medical association and sponsored by the pharmaceutical industry. The medical council has introduced a CME credit system in which 250 points are needed every 5 years for relicensing but points can be gained without learning anything about prescribing. The Directorate of Pharmaceutical Services undertakes prescription monitoring in the puskesmas, training of pharmacists in good pharmaceutical care and a community empowerment program. However, there appears to be no active program to promote rational use of medicines targeted at doctors, who are the main perpetrators of irrational prescriptions.
It is recommended that the sub-Directorate of Rational Use of Medicines be strengthened in order to give dedicated attention to regular monitoring of medicines use and implementing strategies to improve use, targeting doctors as well as pharmacist. Other interventions recommended include: (1) strengthening Drug and Therapeutic Committees (DTCs) in all hospitals with a requirement for them to monitor medicines use, undertake strategies to improve medicines use and report annually to MOH; (2) incorporating the National Standard Treatment Guidelines, the National EML, the National Formulary and prescribing audit and feedback into the Continuing Professional Development curricula; (3) developing public education messages on medicines use to be delivered through the various networks including the medical and pharmacy associations, the media, insurance agencies, schools and health promotion units operated by the Directorate of Maternal and Child Health.

Medicines Regulation

The National Agency of Drug and Food Control (NADFC) is independent of the MOH and reports directly to the President. The NADFC regulates a sector that comprises 15,072 registered products (of which only 12,552 are in the market), 204 manufacturers (in 9 provinces), 2114 wholesalers, 14,429 retail pharmacies (which require a pharmacist on the premises and can sell prescription-only drugs) and 8,729 drug stores (which can only sell OTC drugs and only require an assistant pharmacist on the premises). There are SOPs for all procedures and inspection procedures are well established, although less frequent than the NADFC would like due to lack of resources. Licenses for wholesalers and retailers are issued by the MOH or the local district authority usually on the basis of NADFC recommendation, although this is not always followed and is a source of frustration for the NADFC. There is an active pharmacovigilance program, a drug information centre and monitoring of all drug advertisements. However, other drug promotional activities are not monitored. Antibiotics are freely available without prescription despite this being contrary to the drug scheduling regulations.
It is recommended to improve coordination between the NADFC and MOH and local governments so that licenses to wholesalers and retailers are only issued on NADFC recommendation and to enact a new law that allows the NADFC to freeze the licenses of transgressors. It is also recommended to (1) work towards having fewer drugs registered by not re-registering irrational fixed- dose combination drugs, (2) monitor drug promotional activities over and above just monitoring drug adverts, (3) publish data on drug quality testing in a format that can convince doctors of the quality of generic drugs .

Medicine Policy and Coordination

Promoting rational use of medicines and implementing national drug policy requires coordination between multiple stakeholders. In the MOH, with regard to promoting rational use of medicines, the Directorate of Pharmaceutical Services (with the sub-Directorate on rational use of medicines) has been responsible for activities mainly targeting pharmacists and the Directorate General of Medical Care responsible for activities targeting doctors and hospitals. Much could be gained by sharing of information and pooling of resources between these two different directorates. Currently it is unclear what measures are being taken to coordinate prescriber CME or oversee the functionality of DTCs in hospitals. Other Directorate Generals (DGs) may also play a role such as the DG Nutrition and Maternal Child Health which operates many community health programs. Currently, there is no forum for these different DGs to meet either together or with other important stakeholders, such as the NADFC, the Medical and Pharmacy Councils, the insurance agencies and the Ministry of Education (responsible for Schools of Medicine, Pharmacy and Nursing). Only by meeting regularly can irrational use of medicines be tackled effectively.
It is recommended that a coordinating mechanism under the MOH be established whereby the Directorate Generals within the MOH, Medical and Pharmacy Councils, the NADFC and the Ministry of Education can be brought together to resolve issues; this forum could be chaired by the Secretary General of Health. It was further recommended that the sub-Directorate on Rational Use of Medicines be strengthened to better monitor medicines use and coordinate strategies to improve medicines use.

Terms of Reference

The objectives of the mission were:

(1) to meet senior officials of the Indonesian Ministry of Health (MOH);

(2) to conduct a rapid assessment of the pharmaceutical situation - with a focus on drug supply and rational use of medicines, in liaison with a national counterpart from the MOH;

(3) to report on the findings in a workshop to government officials and other stakeholders and to develop recommendations for future action.

Background

This mission was undertaken to conduct a national situational analysis with regard to the pharmaceutical sector in order to aid MOH in planning future action and also to plan for future WHO technical support.

The regional strategy to promote rational use of medicines (RUM), updated at the regional meeting of July 2010, recommends undertaking a situational analysis in order to plan for a more coordinated integrated approach to improving the use of medicines. This mission was undertaken during 11 - 22 July, 2011, for this purpose. During the situational analysis, a checklist/tool developed in HQ/WHO and now being revised in the region was used. This tool allows the systematic collection of information. The persons met during the fact finding mission can be seen in annex 1. An integral part of this mission was a one-day workshop with 38 stakeholders that was held at the end of the mission to discuss and validate the findings and to form a road map for action. The participants of the workshop can be seen in annex 2.

Indonesia is now a middle-income country with a well developed health care delivery system with trained staff and relatively good health statistics (Suryawati 2011). Part of this health care delivery system includes the provision of medicines, free of charge in the public sector, for the 40% of the population covered by government health insurance. However, the out-of-pocket payments for the non-insured are high. Since decentralization in 2000, procurement for most general drugs is done by the districts and no longer by the central level (although drugs for the vertical disease control programs still remains under central control). Irrational use of medicines has become a major problem and the MOH has little information on what drugs the districts are using. For this reason, the situational analysis was undertaken. It is hoped that the recommendations made will be incorporated into future plans of action.

The words “medicine” and “drug” are used interchangeably in this report.

Medicines Supply

Since decentralization in 2000, drug supply in the public sector has been managed by local district governments. The District Health Office procures and distributes for all primary care facilities - primary health care centres (puskesmas), sub-primary care centres (pustus), maternal child health clinics (polindes), community clinics (posyandus) and mobile clinics (puskesling). A budget is supplied from central government and the district health office must manage it. District hospitals do their own procurement using a budget from local government and also by charging for drugs (either directly to non-insured patients or to government or private insurance. There was no stock-out of medicines reported in any of the health facilities on the day of the consultant visit.

Central Level

At the central level, under the Directorate General of Pharmaceutical and Medical Devices, the Directorate of Public Supply procures and distributes a buffer stock of medicines for emergencies and disease outbreaks. The total budget in 2010 was Rp.669 billion. The buffer stock is based on one year's previous purchase minus the balance in the central warehouse. There is no reporting from the districts so quantification cannot be done according to patient need nor even according to consumption data from districts. If a request from a district or province is received, drugs are sent according to the request provided the drugs are in stock and with some adjustment depending on requests elsewhere. Requests also frequently come from charitable organizations at the request of politicians for the purposes of doing medical camps. It was mentioned that the buffer stock is not enough since it is also based on the available budget and not on need. All drug inventory control is manual but it was mentioned that a new e-logistic drug inventory system was under development (software is currently being designed) and will be piloted in 115 districts initially. It was further mentioned that drug transport is expensive but no details about the frequency of supply could be given (frequent emergency orders will result in more transport costs).

The vertical disease programs, HIV, TB and malaria programs have, until this year, purchased and distributed their own drugs without reference to the Directorate of Public Supply. However, in 2010, a One-Gate Policy was started whereby all procured drugs must past through the Directorate of Public Supply. The initiative is still in the process of being implemented. Currently there is a separate central warehouse for the disease control programs. The quantification for these drugs is done by the programs and agreed with the Directorate of Public Supply which then procures the drugs. The drugs are sent to the province warehouses which distribute the drugs to the districts. However there are still exceptions. All ARVs and second-line TB drugs are sent directly to the hospitals. The budget for these programs is mostly central but partially from the provinces and districts. The central budget is 60% for TB drugs, 80% for malaria drugs and 100% for ARVs. Global Fund is included in the central budget and constitutes 30% of the TB drug budget and 20% of the malaria drug budget. It was mentioned that there is poor coordination between the programs and the provincial warehouses and district authorities that manage the medicines.

Procurement is done by local annual tendering with wholesalers. No drugs are purchased directly from manufacturers. Wholesalers must bid for drugs by programme (e.g. TB, HIV, malaria, nutrition, "general primary care buffer stock") and only one wholesaler wins. Apart from price, the other criteria for selecting a winner were unclear as was the constitution of the committee that decides on who wins the bids. It was mentioned that the auditors did not accept any kind of pre-qualification process with criteria (apart from administratively filling in the tender form correctly) but that bids were judged on price and technical specifications. There appeared to be no supplier performance criteria and it was mentioned that a supplier had bid very low prices, which the MOH had been forced to accept, and that now the supplier had defaulted. It was not clear what would now happen.

Since all districts and hospitals are doing their own purchase there are no economies of scale. MOH has realized this problem and there have been discussions on pooled procurement, pooled tender and tendering according to price only. However, the local governments have not agreed - they wish to spend their own monies. It was also mentioned that the procurement process may be influenced by politicians and people outside the health sector in the provinces and districts.

Prices are fixed by the MOH only for INN generic products according to manufacturer price plus a 40% mark-up between the wholesaler and retailer. Generic substitution is allowed by the dispenser. The pharmacist can dispense a brand or a branded generic if a generic INN drug is prescribed - so there is a need for the public to be informed about generic drugs.

Provincial and district levels

At provincial level, a buffer stock is procured and distributed to districts on demand in case of stock-out or for natural disasters and epidemics in much the same way as at the central level. Quantification is based on last year's consumption minus the balance and adjusted according to the budget.

At district level, quantification is based on last year's consumption minus the balance. The central MOH supplies a budget to District Health Offices (DHOs) for procuring medicines for use in the puskesmas and all these medicines must be from the generic list supplied by MOH. The local government supplies a supplementary budget which can be spent on medicines that the local DHO chooses. The proportion of budget that comes from the central versus the local levels varies. It was found that in Maros district, 32% of the drug budget was from local government whereas in Batam district only 11% of the budget was from local government. Since there was no complete consumption data, per capita consumption could not be calculated. Therefore, one could not judge whether the central budget distributed to districts was unequal in terms of amount per capita or whether per capita consumption was higher or drug prices were higher in Maros district as compared to Batam district.

All medicines are dispensed free of charge to patients coming to the puskesmas. In contrast to the DHOs, district hospitals do not receive a budget from central MOH but receive a budget from local government. This budget is supplemented by income received by charging for all medicines dispensed. According to district policy,

patients must also pay a registration fee, which is about Rp 5000 in puskesmas, somewhat more in district hospitals, and up to Rp 40,000 in referral hospitals.

Puskesmas should report 1-3 monthly to the DHO on their stock balance. There is a pharmacist in charge of the district health office warehouse but sometimes no pharmacist in the DHO itself, so supervision of puskesmas pharmacy stores is generally done by pharmacy assistants or other staff in the DHO.

There is no electronic drug management inventory system that is common to all districts or specifically designed for monitoring of stock in all the puskesmas. In both district health offices visited, however, there were computers in the drug store and a print-out of drug purchase in 2010 could be obtained - both for the central budget and the local government budget. Furthermore, it was possible to export the data into excel and perform an ABC analysis although the pharmacy staff did not generally know how to do this, nor what kinds of analysis they could do to (see section on consumption).

Possible Solutions

1. Establish an electronic drug management inventory system and expand to all the provinces, districts and hospitals:
   - will provide data for quantification and data on inconsistencies in drug supply between provinces and districts but will require capacity building for districts in undertaking ABC-VEN analysis
   - could expand the MOH pilot system or use existing IT systems.

2. Establish a requirement for all districts and hospitals to report annual drug consumption to provinces and to MOH.

3. Strengthen the one-gate policy for drug supply;
   - Covering general and disease control drugs.

4. Strengthen drug supply management and selection in the districts, ensuring that a pharmacist is given a lead role.

5. Start a dialogue with provinces and districts on pooled procurement to achieve economies of scale, which:
   - could be within provinces initially and between provinces later;
   - should be based upon best practices identified within the province (i.e. good practices in some districts should not be sacrificed);
   - will be facilitated by using consumption data as evidence for advocacy;
   - will require and could facilitate more consistency between EMLs (see selection).

Health Insurance

About 100 million people (42%) of the population are covered by some kind of social government, civil service or other private health insurance. ASKES is the government health insurance agency that provides health insurance for all government civil servants. There are 16.6 million members in this scheme with a Rp 6 trillion turnover per year. The premium is 2% of the basic salary and for this all inpatient and outpatient services, including medicines, are covered. There is no maximum limit, but the patient must attend an approved private doctor or a public health facility (puskesmas or hospital), can only get medicines from the ASKES list and in outpatients can only get a maximum 3 drugs on one prescription, unless there is a prior justification and approval from ASKES. To bypass the 3-drug limit, some doctors give the patient 2 prescriptions with a different set of drugs. In addition, the ASKES insurance will only cover families up to a maximum of the employee, spouse and 2 children, (for which the employee must contribute 2% x 4 persons = 8% of his/her salary) . On average the premium comes to Rp. 34,000 per person per month. Higher paid workers pay more premium and are allowed to claim class A cabins in hospital, while lower paid workers pay less premium but can only claim class C cabins in hospitals.

JAMKESDA is health insurance provided by local governments. ASKES actually runs this type of insurance on a specific contractual basis with individual districts. They currently have contracts with 242 district local governments, each one having different premiums and benefit packages. For example, in Aceh, the local government pays 17,500 per person per month for the whole population and for this all health care is covered - but only in 3rd class cabins for hospital care. In another district in Sumatra, the local government pays a lesser amount (premium) per head of population, but only district hospital care is covered.

JAMKESMAS is government social health insurance, which covers the poorest people. Currently it covers 76.4 million people, all of whom have to prove to government that they have low income. The ASKES administers the JAMKESSMAS for the government but does not handle the funds, which come from central government - the Centre for Health Insurance in MOH - which reports directly to the Secretary General of MOH.

In order to handle all the 3 insurance schemes, ASKES has 91 branch offices, 12 regional offices, 2700 staff for the ASKES and JAMKESDA schemes, plus an extra 1000 staff to administer the JAMKESMAS on behalf of central government. Every branch has at least one doctor and one pharmacist. All government puskesmas, 365 hospitals and 3500 private general practitioners (who are paid by capitation fee) have a contract with ASKES for government civil servants and for those covered by JAMKESDA where available.
ASKES has negotiated with manufacturers to supply (through agreed wholesalers) all drugs for use in insured patients at 40% less than the commercial price. In this way, ASKES has achieved economies of scale with regard to drug purchase throughout the country, even though individual wholesale purchases may be quite small.

Each ASKES branch actively monitors the prescribing and type of treatment given by prescribers and hospitals. The number and type of drugs prescribed to patients is

monitored, effort is made to correlate diagnosis with drugs, and meetings are held 3-monthly with each hospital. If a hospital or GP prescribes excessively, they will be warned and, if they take no heed, not have their contract with ASKES renewed. There is an Advisory Board to judge individual cases. Senior ASKES staff mentioned that there were too many drugs on the market and that this made it very difficult to develop and enforce a limited list. Their current list has 1035 items and approximately 400 chemical entities. At present, they are targeting hospitals with regard to monitoring treatment and trying to contain costs. Since ASKES has the majority of the insurance market, it is not clear why they have not been able to reduce the number of items on their list.

Private health insurance covers about 4 million people in Indonesia. By far the biggest company in private insurance is INHEALTH, a subsidiary of ASKES, which targets commercial workers and covers about 1 million people. According to government law, all workers of government-owned companies must be covered either by JAMKESDA or a private insurance such as INHEALTH (JAMSOSTEK). It was mentioned that copayments were not generally implemented as cost containment measures in Indonesia because of difficulty of implementing them properly. This is because pharmacies are reimbursed by the insurers, rather than patients being reimbursed by the insurer, and there is no fixed price of branded generic products. Thus, patients and pharmacists may collude such that an inflated price is presented to the insurer by the pharmacist so allowing the patient not to pay the copayment.

Possible Solutions

1. Reduce the number of items on the various insurance lists, including ASKES, and try to harmonize with the national EML.

2. Institute maximum reimbursement prices for all medicines.

3. Consider, changing the ASKES system from one of reimbursement to the pharmacist, hospital, puskesmas or GP to one of reimbursement to the patient - such that the patient would have to pay first and claim later. In such a system, a copayment for the patient (e.g. 20% copayment by the patient who would only be reimbursed 80% of the costs) could be introduced and costs contained.

Medicines Selection and Consumption

Indonesia has a national Essential Medicines List (EML), updated every 3 years (last time in 2008) and which is currently being updated. The description of the national essential medicines, criteria for selection, additions and deletions, guidance on evidence and recommendations and the revision process are well described, demonstrating the transparency of the process. The list contains 323 chemical entities and 109 experts participated in the technical meetings and plenary discussions involved in selection. WHO undertook a detailed review of the 2008 EML, as part of the mission and the review was shared with the Indonesian MOH in July 2011. Unfortunately, the EML is not being fully followed by government, provinces, districts or hospitals. The MOH requires that all district health office procurement

using the central MOH budget be from the generic list that they produce every year. This list has 453 items of which only 212 (47%) are on the national EML. Procurement using local government budget can be of any medicine they choose. All provinces, districts and hospitals have developed (or are developing) their own formularies and following these. Virtually all such formularies contain more drugs that on the national EML. The government insurance agency ASKES has its own list of 1035 items. The national referral hospital in Jakarta has a formulary of 905 drugs and a total of 1800 items. Both DHOs visited had procured mostly non-EML items with their local government budgets. Non-EML vitamins consumed more than 50% of the local government budget in Maros district and 29% in Batam district.

Regulation requires that all hospitals have a formulary and a Drug and Therapeutic Committee (DTC). In large hospitals, there is even a budget for a DTC, but it is mostly consumed on meetings to develop a formulary and then printing it. Selection of drugs for the formulary in most hospitals and districts seemed to be based on doctor request with little recourse to searching for evidence of efficacy and safety. Many doctors and health officials in the two provinces visited had never seen the national EML. Even the chairman of the DTC in the national referral hospital mentioned that their formulary was large (905 drugs) because of pressure from physicians, who had insisted on having not only the generic of any chemical entity but also the originator brand and two branded generics for many medicines. The logic of the latter is unclear since doctors are supposed to prescribe by generic name in public facilities and therefore, theoretically, they would not be able to control what generic or branded generic drug is dispensed. Furthermore, the pharmacy is only allowed to purchase 2 versions of any one drug at any one time, depending on availability and price, and normally only 6-monthly, and generic substitution is allowed. Nevertheless, many doctors are still not prescribing by generic name despite the Presidential Degree (see section on medicines use). At all the facilities visited, the consultant collected data on drug consumption during 2010 or 2011 and undertook an analysis manually. The results are shown in table 1.

Table 1: Consumption analysis

Facility or area		Top 8-30 drugs*			Antibiotics	Vitamins
		% items	% budget	% EML	% budget	% budget
Central supply buffer stock, Feb-March 2010		11%	76%	80%	34%	5%
Kepulauan Riau Province buffer stock, 2010		15%*	54%	88%	23%	4%
National Referral hospital, June 2011	IPD	1%	39%	20%	-	-
	OPD	1%	27%	15%	-	-
Maros district 2010		15%***	69%	57%	41%	19%
Batam district 2010		13%	58%	60%	33%	6%
Batam district hospital 2010		7%	38%	25%	25%	6%
Private pharmacy, Jakarta, June 2011		1%	13%	0%	-	-
Private pharmacy, Bintan, June 2011		1%****	16%	23%		

*20 items unless otherwise specified; *8 items; ***14 items; ****30 items

This data shows that the top few items by value are consuming a disproportionately large proportion of the budget. It was also found that of the total value of drugs distributed, antibiotics consumed 22-41% of the budget and vitamins 4-19%. Many of the top drugs by value can be seen to be non-EML drugs, particularly in the hospitals. Effort could be directed to looking at whether these drugs are being consumed appropriately. If such data were published annually, policy makers and prescribers could be sensitized on the consumption and cost of drugs. This may then be taken into account in when planning activities with regard to the selection and use of medicines.

Estimation of total per capita consumption by value of drugs in puskesmas in 2010 was calculated by dividing total district health office drug expenditure by district population. Per capita drug expenditure was Rp 8404 in Maros district and Rp.2753 in Batam district. When broken down by budget source, per capita expenditure by central government was Rp 5675 in Maros and Rp 2753 in Batam district and per capita expenditure by local government was Rp 2729 in Maros district and Rp 344 in Batam district. These figures suggest much greater drug use in Maros district as compared to Batam district and much greater subsidy of drug expenditure by central government in Maros district as compared to Batam. The difference in expenditure by local government between the two districts may be partially due to greater quantities and types of drugs and partially due to different prices of drugs. Whatever the reasons for these differences, they merit further investigation and demonstrate the need for robust drug consumption data for planning.

Table 2 shows the top 20 drugs by value in two districts (covering drugs purchased with central and local funds), one district hospital and one province (buffer stock).

Table 2: Top 20 drugs in 2 districts, 1 hospital and 1 province buffer stock, 2010

	Drug Name	Value (Rupiah)	Drug Name	Value (Rupiah)
	Maros District, Sulawesi Selatan		**Batam District, Kepulauan Riau**	
1	Amoxycillin 500mg	664,386,800	Amoxycillin 500mg	252,525,000
2	Multivitamin syrup	238,799,000	Amoxycillin syrup	214,200,000
3	Paracetamol 500mg	155,925,000	Ambroxol syrup	203,490,000
4	Metampiron 500mg	130,327,500	Cefixime syrup	127,050,000
5	Amoxycillin 250mg	125,664,000	Paracetamol 500mg	126,787,500
6	Multivitamin tab	101,640,000	Paracetamol syrup	90,562,500
7	FDC1	98,736,000	Cefixime 100mg	88,001,550
8	Zinc syrup	42,900,000	Domperidone syrup	66,412,500
9	Amoxycillin syrup	39,270,000	Dextromethorphan syrup	63,000,000
10	Ringer Lactate	39,036,750	Mulitvitamin syrup	62,000,000
11	Cefadroxyl 500mg	38,500,000	Calcium Lactate	61,944,700
12	Erythromycin 500mg	35,309,400	Meloxicam 7.5mg	49,376,250
13	Cotrimoxazole 480mg	33,000,000	Betamethasone cream	47,250,000
14	Prednisone 5mg	33,000,000	Obat Batuk Hitam	45,987,500
15	Hydrocortisone cream	32,795,000	Cefadroxyl syrup	45,549,000
16	Oxytocin injection	29,452,000	Cotrimoxazole susp.	44,714,250
17	Normal Saline	27,270,000	Haemorrhoid suppository	42,000,000
18	Betamethasone cream	26,185,000	Simvastin 10mg	40,398,750
19	Glycerol guaicolate	25,564,000	Vitamin B Complex tab	34,965,000
20	Dexamethasone 0.5mg	25,439,400	Diclofenac 50mg	34,384,600
	Batam Hospital, Kepulauan Riau		**Kepulauan Riau province buffer stock**	
1	Co-amoxyclav tab	96,800,000	Amoxycillin 500mg	38,849,800
2	Cefixime syrup	60,500,000	Ringer Lactate	38,464,800
3	Oxytocin injection	44,937,500	Snake antivenom sera	20,350,000
4	Ketoralac injection	40,095,000	Fitodiar(antidiarrhoeal) tab	18,667,110
5	Ceftriaxone injection	35,235,810	Metampiron/antalgin tab	14,069,880
6	Fenofibrate sachet	34,883,350	Antacid tab	12,882,480
7	Lansoprazol 30mg	33,440,000	Betamethasone cream	9,449,880
8	Misoprostol tab	31,350,000	Calcium Lactate 500mg	8,259,240
9	Amlodipine 10mg	27,527,500	Amoxycillin syrup	7,944,156
10	Glaucon (herbal) tab	27,500,000	Lidocaine+epinephrine inj	7,890,960
11	Mometasone furoate ointment	27,500,000	Ibuprofen 400mg	7,744,000
12	Osseine hydroxy apatite tab	27,225,000	Glucose 5% infusion	7,623,000
13	Anti-tetanus serum	27,225,000	Anti-tetanus serum	7,524,000
14	Mefenamic acid 500mg	26,390,000	Paracetamol 500mg	6,614,520
15	Nystatin drops	25,725,000	Povidone iodine	6,089,600
16	Methisoprinol syrup	24,420,000	Aspirin tablet	4,627,150
17	Lincomycin 250mg	24,375,000	Captopril 25mg	4,338,840
18	Vitamin C injection	24,329,107	Ranitidine 150mg	4,199,800
19	Ringer Lactate	22,895,000	Erythromycin syrup	4,110,480
20	Metronidazole infusion	19,800,000	Vitamin C 250mg	4,000,046

Possible solutions

1. Establish an electronic inventory management system for all hospitals & districts:
   - For better estimation / forecasting of drug need;
   - To identify high and irrational drug consumption (ABC analysis) for feedback to prescribers.

2. Require every province and district to produce an annual report on consumption:
   - In terms of quantity and cost for each line item;
   - In order to make comparisons by per capita, therapeutic class, province, health facility and district so as to identify high cost line items and high consuming facilities where monitoring can be concentrated.

3. Harmonize all medicine lists across provinces/districts:
   - Dialogue can be started if consumption data is available

4. Provide the National Essential Medical List and Formulary free to all provinces and districts:
   - With an explanation of how evidence was used and encouragement for them to use the national EML in developing their own formularies.

Medicines Use

Only 4 published studies done during the last 10 years were identified by the consultant - all found in the WHO archives and not published internationally. In 2003, a survey of prescribing indicators in primary care (puskesmas) found that on average every patient was given 3 drugs and that half of them received antibiotics (WHO 2006). It was further found that: 20% of upper respiratory tract infections received antibiotics; all prescribed drugs belonged to the national EML; none were labeled adequately; and that only 60% of facilities had the national EML or STGs available. In 1999 another survey found that 63-71% of cases of upper respiratory tract infection cases received antibiotics at baseline and that this reduced to 24% after small group discussion among health workers in the intervention group but remained at 47% in the control group (Hidayati and Munawaroh 2002). An evaluation of IMCI in 7 districts in 2008 found that 27.6% of children received antibiotics inappropriately (MOH 2008).

The latest data from the Directorate of Pharmaceutical Services, MOH, on prescribing in primary care in 2010, found that on average every patient was given 3.4 drugs and that 57.4% of them received antibiotics (MOH/WHO/Suryawati 2011). In addition, it was noted that: 93% of prescribed drugs belonged to the EML, 100% were adequately labeled and 3% of patients received an injection. Further examination of 2010 provincial data supplied by MOH showed that the % of non-pneumonia cases prescribed antibiotics was 23-91% in the Western region, 0-78% in the Central Region and 42-93% in the Eastern Region. The % of non-specific diarrhoea cases prescribed antibiotics was 23-91% in the Western Region, 0-89% in the Central Region and 7-93% in the Eastern Region. Furthermore, the average number of drugs per patients ranged from 1.3 to 4.8 and the % of drugs prescribed by generic name

ranged from 20 - 95% across all provinces. This data indicates serious irrational use of medicines in some provinces. It was unclear how the Directorate of Pharmaceutical Services was using the data, whether it was being fed back to prescribers or whether it was being used to measure the impact of interventions. Certainly, some indicators of prescribing do not seem to have changed much in recent years. The Directorate of Pharmaceutical Services and particularly the sub-Directorate of Rational Use of Medicines complained of lack of staff and certainly it seemed that they had a very large task to be done by relatively few staff.

The consultant undertook a rapid survey of outpatient prescribing in 7 public facilities and 5 private facilities during the mission. Prescriptions are kept by all pharmacies (in both the public and private sectors) for 5 years. Thus, data was collected by examining the most recent prescriptions collected in the pharmacy or dispensary, whether in a public facility or in a private one. Cost data was obtained by examining carbon copy patient bills, which were attached to all prescriptions, for all non-insured patients (but not JAMKESMAS or JAMKESDA patients). Care was taken in hospitals to include only new primary health care type cases, which can be assessed using INRUD indicators, and to exclude discharged inpatients and chronic specialist cases. Nevertheless, in the polyclinics attached to the teaching hospitals, chronic cases could not be excluded. At least 30 patient prescriptions were examined per survey per facility. The results are shown in table 3.

In all facilities except the puskesmas (where no patients paid), separate surveys of the insured (JAMKESMAS and JAMKESDA, but not ASKES, thus covering the majority of insured) and non-insured patients were done. However, no significant differences in prescribing could be detected between the insured and non-insured across facilities. This was probably because the proportions of patients that were insured or not insured varied with different facilities and also the types of insurance in retail pharmacies varied greatly. The figures presented in table 3 are an average across insured and non-insured in the teaching hospitals, only insured in district hospitals and puskesmas, and only non-insured in retail pharmacies. In the district hospital in Maros, the dispensary for non-insured patients was found to be dispensing off-the-list medicines for JAMKESMAS-insured patients and not serving any non-insured patients at all. No prescription survey was done in any hospital emergency departments where the use of injections and intravenous infusions is likely to be much higher than in the surveys reported here. In Maros district hospital, where the non-insured dispensary was mainly dispensing out-of-list drugs to JAMKESMAS patients, 56.1% of patients received an injection.

Table 3: Primary care drug use indicators in facilities visited during the mission

Drug use indicator	Referral hospital (n=2)	District hospital (n=2)	PHC puskesmas (n=3)	Private* hospital (n=1)	Private retailer (n=4)
Average number drugs per prescription	2.58	3.04	3.26	3.4	2.53
% prescriptions containing antibiotics	34.2%	54.9%	44.7%	46.7%	33.6%
% prescriptions containing injections	4.1%	3.0%	0%	3.3%	7.8%
% prescriptions containing vitamins	35.4%	30.2%	52.3%	36.7%	39.4%
% prescriptions containing steriods	9.4%	21.3%	21.3%	3.3%	18.6%
% prescriptions containing puyer**	8.4%	12.2%	12.9%	6.7%	15.6%
% drugs prescribed by generic name	55.9%	80%	95.4%	19.6%	26.9%
% prescribed drugs belonging to EDL	44.5%	61.2%	90.5%	31.4%	36.7%
% prescribed drugs dispensed	91.9%	90.4%	99.5%	96.1%	94.3%
Average drug cost per prescription (Rp)	71,646	30,086	-	307,083	147,543

* Military naval hospital that also provided private services to non-servicemen, where the prescription analysis only concerned private non-service men prescriptions in the private pharmacy, there being a separate pharmacy for servicemen.
**Puyer is when two or more drugs are prescribed with instructions for them to be pulverized together (in a food mixer or by pestle and mortar) to form a powder which is then divided and packaged by eye into individual doses.

Table 3 shows that the average number of drugs increases with lower the level of public facility i.e. fewer drugs were prescribed per patient in referral hospitals compared to district ones compared to puskesmas. One would normally expect to see higher drug use per patient in higher level facilities as they see more complex cases. It may be that the hospital samples included some specialist cases requiring fewer drugs e.g. surgical cases. However, the results suggest that there is irrational over-prescription in the puskesmas. Antibiotic use the district hospitals and puskesmas was high and similar to what has been observed in other studies including the most recent survey by MOH (2010). There was high inappropriate use of systemic steroids in district hospitals and puskesmas. Vitamin use was high in all facility types and was mostly irrational. Often it was prescribed in addition to several other medicines so its use as a placebo was not justified. Furthermore, vitamins and systemic steroids appeared in the top 20 drugs consumed by value in all the districts, provinces and hospitals surveyed so it is likely that huge amounts of money are being wasted on such drugs. Generic prescribing and prescribing of drugs belonging to the national EML was high the puskesmas but decreased with increasing level of facility being lowest in the national referral hospital. Medicines use in the private retail pharmacies showed low prescribing of EML-drugs and by generic name. The average cost per

prescription (that patients paid) was highest in the private facilities, particularly the private hospital.

In the puskesmas, there is data on diagnosis. In one puskesmas, diagnosis and treatment were recorded in one large register. However, in the other two puskesmas visited, diagnosis but not treatment was recorded in the doctor's register along with a patient name and number. However, by matching patient name and number as recorded in the doctor's register and on prescriptions in the dispensary, a small audit of antibiotic use in upper respiratory tract infection was done. In 30 prescriptions across 3 puskesmas, it was found that 34% of cases of common cold received antibiotics but that 72% of upper respiratory tract infections (non-pneumonia) received antibiotics. These findings are similar to those found more than 10 years ago (Hidayati and Munaworoh 2002) and those found last year during routine data collection (2010 data provided by MOH). Thus it would seem that despite routine monitoring and many efforts to promote rational use of medicines by the MOH, prescribing practices have not much changed in primary care.

The number of patients a prescriber sees per day may affect the quality and length of the consultation and ultimately how medicines are prescribed. On average doctors saw about 50 patients a day. While short consultation time was a problem for some prescribers, many did have sufficient time to give quality consultations. Patient-dispenser interaction time was often only 1-2 minutes or less and often discussion between dispenser and patient was minimal. Most drugs were dispensed in small plastic bags, on which the name of the patient and how to take the drug were written, but not the name of the drug. Thus, according to WHO standards, no drug was properly labeled.

Puyer

The practice of puyer is where 2 or more (often 5-10) different prescribed drugs (the number of tablets varying according to the number of drugs and the amount of each drug prescribed), are pulverized together into a powder and then allocated into a number of doses, packaged separately, by eye. This practice was observed in all facilities. Sometimes a pestle and mortar was used and sometimes a food mixer. The food mixer was wiped with a dry cloth between making different puyers in one puskesmas. Irrational fixed-dose combination products were also frequently used. Box 1 shows examples of puyers and irrational fixed-dose combination products that were observed to be used.

None of the prescribing doctors met in the puskesmas or district hospitals felt that puyer was unsafe or ineffective. None seemed to know of the effort made by manufacturing companies to ensure bioavailability of fixed-dose combination products or that puyer ignores good manufacturing practices. In addition, many irrational fixed-dose combination products on the market were highly popular. All the prescribing observed was done by doctors. However, it was mentioned by the MOH that in remote parts of Indonesia, prescribing is done by paramedical staff and nurses.

Box 1: Puyer and Irrational Fixed-Dose-Combination products

Drugs observed to be used in puyer:

- paracetamol, chlorpheniramine, vitamin B Complex, vitamin C, glycerol guiacolate;
- paracetamol, chlorpheniramine, ambroxol, ephedrine, vitamin C, glycerol guiacolate;
- paracetamol, chlorpheniramine, dexamethasone, dexomethorphan;
- chlorpheniramine, ephedrine, dexamethasone, vitamina B Complex, glycerol guiacolate
- chlorpheniramine, vitamin B Complex, vitamin C
- paracetamol, diazepam, dimenhidrinate, chlordiazepoxide, methyl prednisolone, vitamin B6;
- frusemide, captopril;
- theophlline, prednisolone, trimetoquinol;
- dextromethorphan, bromhexine, ephedrine, tripanzyme, cyproheptadine;
- clobazam, alprazolam;
- erythromycin, salbutamol, dexamethasone, chlorpheniramine;
- chlorpheniramine, codeine, methyl prednisolone, cetirizin, phenylpropranolamine, salbutamol;
- papaverine, belladona, metoclopramide, loperamide, antacid

Irrational fixed-dose combination products on the market that are frequently used:

- Metampiron + diazepam tablets
- Tramadol + paracetamol tablets
- Dexamethasone + dexchlorpheniramine tablets
- Dextromethorphan + phenylpropanolamine + chlorpheniramine + paracetamol tablets
- Antacid + multivitamin tablets
- Amytriptyline + diazepam tablets
- Loratidine + pseudoephedrine tablets
- Polymixin + Neomycin + Fluorocortisone + Lidocaine ear drops

Standard Treatment Guidelines

There are a national EML (MOH 2008) and a national standard treatment guideline (STG) for puskesmas (MOH 2007),both of which are regularly updated. There are no national STGs for hospitals and no national formulary manual based on the National List of Esential Medicines. However there are 4 specialist formularies for paediatrics, gynecology, dermatology, ophthalmology, available since 2005 (not yet updated). There is also Indonesian National Information on all registered medicines. Few doctors were using the national STG in the puskesmas. The national referral hospital in Jakarta had developed their own STGs for each of the medical specialties and was using them to train medical students, although it was not clear that doctors were actually using them in their daily practice. In the other hospitals visited no STGs were being used. One medical student in Makassar teaching hospital mentioned that the students would greatly appreciate STGs as they found the vast array of drug names used in the teaching hospital confusing. The Directorate of Pharmaceutical Services has developed Guidelines for Pharmacists on Good Pharmaceutical Practice for 20

different conditions. These guidelines are very similar to standard treatment guidelines with information on diagnosis and treatment. It was mentioned that pharmacists could use these guidelines to inform doctors. However, none of these guidelines on good pharmaceutical care was seen in any facility and all pharmacists complained that doctors would not take their advice so it is unlikely that many of these guidelines on Good Pharmaceutical Care are being used.

Prescriber Information and Education

Apart from the national EML, STGs for puskesmas and formulary, sources of independent drug information are quite few. It was unclear what sources of drug information were being used by doctors. Some mentioned using their old text books from medical school or the internet but there were few up-to-date sources of independent drug information. There is a Drug Information Centre (DIC) run by the NADFC, although few doctors met had used it. Most doctors seem to get their information from drug representative visits. One hospital Director mentioned that doctors could have 3 jobs and that they received daily visits from medical representatives in all their workplaces

It was mentioned that prescribing principles are taught at the undergraduate pre-clinical level during a pharmacology block. Unfortunately what they learn is undermined by their clinical studies and later work with senior consultants. Therefore, prescribing skills and clinical pharmacology teaching are needed during the clinical as well as the pre-clinical training. Unfortunately clinical pharmacology and prescribing are not in the formal curriculum for clinical studies as decided by the Indonesian Medical Council. Nevertheless, the clinical pharmacology department in the national referral hospital had managed to incorporate some discussion of clinical pharmacology into two case studies that every medical student must do during the period with the department of internal medicine.

Continuing Professional Development (CPD) or continuing medical education (CME) consists of adhoc evening or lunch time seminars with food sponsored by the pharmaceutical industry. In addition, doctors may attend annual symposiums or conferences in their area of expertise. Rarely doctors attend training programs run by the vertical disease control programs of MOH. However, no doctor met recollected attending any CME session that included anything on rational prescribing.

The Indonesian Medical Council has developed a new accreditation system whereby all health workers must gain 250 continuing medical education credits in 5 years to get re-licensed. There are 5 main ways to credit points:

1. Attending an educational meeting as a participant - which may be a seminar run by the local medical association or a meeting run by the local hospital or an annual symposium - all of these usually sponsored by the pharmaceutical industry;
2. Acting as a resource person or giving a lecture in one of the above-mentioned fora;
3. Writing journal articles;
4. Research in clinical care;
5. Voluntary work such as undertaking a clinical camp.

It is possible to do any one or all of these functions without actually learning anything about how to use medicines in a more rational manner, even within the doctors' concerned areas of expertise.

Drug and Therapeutic Committees (DTC)

There is no national DTC but there is a mandate that all hospitals should have a DTC and some hospitals have a budget for its function. However, in most cases, the DTCs are not functioning well, meeting only a few times per year or less. In many cases the DTC's only job is to develop the hospital formulary (which all hospitals are mandated to develop) and the entire budget is spent on meetings and printing the formulary. Unlike for the national list of Essential Medicines, evidence-based processes are not generally used in developing hospital formularies, all doctors just coming together and stating what they need. The hospital pharmacist and director are generally responsible for prescription control whereby the pharmacist notifies the director of doctors who are prescribing out of the formulary or by brand name. The Director then warns the concerned doctors to prescribe within the formulary and by generic name. However, all the hospital directors met stated that it was very difficult to control doctor prescribing and that many doctors still prescribed out-of-the-list and by brand name forcing the patients to buy outside from pharmacies.

Other activities that a DTC should undertake, such as monitoring drug use, supervision, drug use evaluation, coordinating training activities, monitoring adverse drug reactions and events or formulating local drug policy, were generally not done. It was mentioned that hospital care and DTCs fall within the remit of the Directorate General of Medical Care and that the Directorate General of Pharmaceuticals and Medical Devices (including the Sub-Directorate of Rational Use of Medicines) was not involved in this. Unfortunately, the consultant was not able to meet any staff within the Directorate General of Medical Care despite requesting a meeting, nor did any of their staff come to the 1-day workshop despite an invitation.

Public Education

All health personnel mentioned patient demand as a major reason for irrational use of medicines. Many prescription-only medicines, including antibiotics, are freely available over the counter. No districts visited mentioned that they were running or had run any public education programs on medicine use. The Directorate of Pharmaceutical Services in MOH is running several community programs to promote rational use of medicines. The sub-Directorate on Rational Use of Medicines is running a training of trainers for 2 pharmacists and 2 doctors in every district, sensitizing them to the issue of irrational use of medicines and how to undertake prescription monitoring and other local activities to promote rational use of medicines. So far, 16 provinces have been visited in the past 4 years. The idea is to form a rational use of medicines movement. Also included in this initiative is the development of the CBIA (community member active learning method) program to empower consumers. This module was developed in conjunction with the Department of Clinical Pharmacology, Gadjah Madjah University, Yogyakarta and has been used to improve mothers' skills in selecting OTC medicines for common cold, improving

diabetic patients' adherence to treatment guidelines, and to improve self medication (WHO 2010).

In addition, visits are made to all provinces annually - by the sub-Directorate on Community Pharmacy which visits 2 hospitals, 2 puskesmas and 2 dispensaries in every province and by the sub-Directorate on clinical pharmacy which visits the hospitals in every province. However, most of these efforts are directed towards pharmacists and not doctors.

The Directorate General of Maternal and Child Health organizes Community Health Education while undertaking a number of routine services including childhood vaccination and antenatal care. In addition they may spread specific public health messages, e.g. hygiene, according requests by the MOH vertical programs. The topics taught in the community have mainly centred on MCH or related subjects and have not included use of medicines.

Finally, some non-governmental organizations are active in promoting rational use of medicines. INRUD has a country group centred in Gadjah Madjah University in Yogyakarta, Java, but with branches in Padang, Sumatra and elsewhere. Another NGO runs a program to sensitize parents on irrational prescriptions for children, particularly on the dangers of Puyer [Dr. Purnamawati', SpA(K), YOP Yayasan Orang tua Peduli (Foundation of Parent Caring)].

Possible Solutions

1. Strengthen the sub-Directorate on rational use of medicines in order for it to be better able to monitor drug use and implement scaled-up interventions targeting doctors as well as pharmacists.

2. Monitor drug use:
   - Using ABC analysis, prescription audit and feedback within facilities as well as well as by MOH;
   - By encouraging collaboration between DTCs, medical and pharmacy schools who could provide students to do the needed drug use studies.

3. Implement Standard Treatment Guidelines, which includes:
   - Developing national hospital STGs and continuing to update the national PHC (puskesmas) STG;
   - Disseminating STGs directly free of charge to every doctor;
   - Incorporating STGs into Continuing Professional Development and undergraduate curricula.

4. Strengthen DTCs:
   - to monitor drug use, encourage CPD & report annually on activities to MOH;
   - by requiring greater doctor participation, possibly by incorporating them as sub-committees in Medical Committees;
   - in DHOs as well as district hospitals, the latter aiding the former as DHO DTCs may need the help of more senior hospital doctors.

5. Strengthen Continuing professional development (CPD) by:
    - incorporating prescribing, the essential medicines concept and prescription audit and feedback into the Indonesian Medical Association credit system for CPD;
    - Involving the medical and pharmacist associations and the health insurance agencies in spreading messages on rational use of medicines through the lectures they organise e.g. on puyer.

6. Strengthen undergraduate education:
    - which should include clinical pharmacology and prescribing in the curriculum of clinical studies;
    - by MOH, together with the Medical Council, establishing a policy to include clinical pharmacology in clinical studies and arranging for a suitable curricula to be developed.

7. Undertake national public education campaigns that could:
    - include core pharmaceutical messages such as "does my child need more than one drug?" or "Medicines packaged from companies are safer than puyer";
    - be given through the Maternal Child Health units, schools, medical and pharmacy associations and the media (insurance companies may pay for this).

Medicines Regulation

Medicine regulation is undertaken by the National Agency of Drug and Food Control of the Republic of Indonesia (NADFC) according to Government Regulation no.72/1998 on Pharmaceuticals and medical devices control. The NADFC has a website http://pom.gov.id . The NADFC regulates a sector that comprises 15,072 registered products (of which only 12,552 are in the market), 204 manufacturers (in 9 provinces), 2114 wholesalers, 14,429 retail pharmacies (which require a pharmacist on the premises and can sell prescription-only drugs) and 8,729 drug stores (which can only sell OTC drugs and only require an assistant pharmacist on the premises). The total annual budget of the NADFC is about Rp 91 billion

Within the NADFC there are 3 Deputy Directorates - (1) Therapeutic Products, Narcotics, Psychotropics and Addictive Control, (2) Traditional Medicine, Cosmetics and Complementary Products Control, and (3) Food Safety and Hazardous Substances Control. In addition, there are a number of other departments as follows: an Inspectorate (Internal audit); a Permanent Secretary (Planning, financing, legal and international cooperation); a National laboratory; a Centre for Drug and Food Investigation (including criminal investigation); a Centre for drug and food research; and a Centre of Drug and Food Information (which maintains the web and coordinates all materials to disseminate to the provinces). Staffing in the NADFC comprises 3780 persons in total, 1500 at the central level and the rest in the provinces. The largest numbers of staff are employed in the laboratory and 250 staff are located centrally in the Therapeutic Products and Controlled Drugs deputy directorate, which undertakes most of the drug regulation.

The NADFC was previously under the MOH but in 2000 was made a semi-autonomous agency that reports directly to the President. Though it is semi-autonomous, it still has to follow government rules with regard to hiring of staff which must be done through the State Ministry of Administrative Reform and can be very lengthy. They have asked for 1500 extra staff each year but have been granted about 150 extra staff per year. Apart from the central office, NADFC has 31 branch offices, one in each province and a few in districts. The branch offices report directly to the central office. There are SOPs for all functions. The laboratory and inspection functions of the NADFC are ISO approved and all the other functions have applied for approval.

The main problem for the NADFC is that while they monitor the behaviour of the various actors e.g. wholesalers and retailers with regard to regulation compliance, they have no power to punish contraveners. It was mentioned that at least 12 wholesalers were caught contravening regulations last year and that NADFC had recommended to MOH to revoke their licenses but that this had not been followed. The same had previously occurred for drug manufacturers but a new regulation in 2010 had clarified roles and responsibilities. If manufacturers do not comply, the registration of one of their products can be revoked by the NADFC. The NADFC is advocating for a new regulation for wholesalers and retailers to replace the existing one from 1990 and wishes to introduce NADFC power to freeze licenses (if not revoke them).

Inspection of Manufacturers and outlets and drug schedules

Local wholesalers, retail pharmacies and drug stores are licensed by local government and central wholesalers by the MOH - all on the recommendation of the NADFC, which monitors them to ensure they comply with the regulations. Unfortunately, if they break the regulations, NADFC can only recommend to local government or MOH, as appropriate, that their licenses by revoked but cannot actually revoke them itself. The NADFC manages to inspect each manufacturer once every 2 years (unless there is a problem requiring more frequent visits), wholesalers one every 4 years and each retailer less than this, using a standard procedure for inspection.

MOH is responsible for drug scheduling but NADFC for monitoring compliance. There are 4 schedules: (1) over-the-counter, (2) prescription-only drugs that can be sold by a pharmacist without a prescription, (3) Prescription-only drugs, and (4) controlled drugs. However, enforcement is weak and many prescription-only drugs, including antibiotics, are freely available without prescription.

Although they have over 2000 staff operating in branch offices in every province, the NADFC complained that the staffing is insufficient to undertake the necessary inspections. Batam district near to Singapore mentioned that many illegal unregistered drugs were being imported from Singapore and sold in retail pharmacies but that they had no power not stop it.

Drug Promotion, Pharmacovigilance and Drug Quality

There is a Drug promotion unit which pre-approves all drug adverts and monitors them post-approval to ensure compliance. Package inserts are also monitored. Other drug promotional activities by drug representatives are not monitored. Monitoring such activities in collaboration with the health professional bodies could be undertaken. For example, medical representatives could be forbidden from entering public health facilities before 2pm, manufacturers could be required to disclose annual marketing costs, doctors could be prohibited from accepting sponsored holidays and other financial incentives from pharmaceutical companies.

A Pharmacovigilance unit is in operation and the NADFC is an Associate Member of Pharmacovigilance Monitoring Centre run by the WHO Collaborating Centre in Uppsala, Sweden. A total of 953 ADR reports are in their database and 737 were reported in the last 2 years.

The national Laboratory of Drug and Food Control is the largest department within the NADFC. In the last 2 years, 37,025 samples were tested of which 259 failed to meet quality standards. Despite quality testing and GMP inspections, many doctors are unconvinced that generic medicines are of sufficient quality. It was suggested by one doctor that if the NADFC provided information on their website about drug quality testing for different products, doctors may be more convinced of the quality of generic products.

Drug registration

The National Committee on Drug Evaluation is responsible for deciding upon which drugs may be registered and consists of academics and other experts. The committee is provided information concerning the efficacy, safety and quality of the product by the NADFC evaluator team that includes both internal and external experts. There are several hundred products for certain chemical entities in all the various formulations e.g. 317 for amoxicillin and 313 for paracetamol. The more products are registered the more work there is for the NADFC in terms of monitoring. Many pharmacists, doctors, hospital managers and the insurance agencies complained that there were too many drugs on the market, making it difficult to undertake drug selection. However, it was mentioned that "me-too" criteria cannot be used as the Commission for Supervision of Business Competition would object and would accuse the NADFC of wanting to create a monopoly. Nevertheless, irrational fixed dose combination products were observed in the market, for example:

- metampiron+diazepam,
- chlorpheniramine+dexamethasone,
- dextramethorphan+phenylpropranolamine+chlorpheniramine+paracetamol.

Not registering new irrational fixed dose combination drugs and not renewing the registration of old such combinations would contribute to reducing the numbers of registered products. Harmonisation of drug lists and formularies, including agreement on fewer branded generic products would reduce the market for some products and result in some reduction in the number of items registered. The registration fee is USD 3139.95 for registering a new chemical entity and USD 829.74 for generic

products for a period of 5 years. However, the fees are sent to the Treasury Ministry of Finance and not kept by the NADFC.

Possible Solutions

1. Advocate for a review of the regulations concerning wholesalers and retail pharmacies such that NADFC has the power to at least freeze the licenses of those who transgress the regulations.

2. Improve the liaison between NADFC and those who grant licenses, including MOH and local governments, perhaps by involving local government in monitoring, so that NADFC recommendations concerning licenses for transgressors are followed.

3. Work towards having fewer brands of same drug (active pharmaceutical ingredient) in the market by:
   - Avoiding registering or reregistering inappropriate fixed-dose combination drugs e.g. metampiron+diazepam, chlorpheniramine+dexamethasone, dextramethorphan+phenylpropranolamine+chlorpheniramine+paracetamol;
   - Harmonizing drug lists both with regard to generic and branded products so as to reduce the market for extra branded generics.

4. Publish easy information on the NADFC website on drug testing results to convince prescribers about the quality of generic drugs.

5. Monitor inappropriate drug promotional activities in collaboration with MOH and professional bodies and councils; such action could include:
   - Banning medical representatives from public facilities before 2pm;
   - Banning inappropriate financial incentives or promotional holidays;
   - Requiring companies to disclose their marketing activities and budgets.

Medicine Policies and Coordination

Medical care is decentralized to provinces and districts. While the central MOH distributes budget to each district health office for use in the puskesmas, there is no central budget for district hospitals or the provincial health authorities. Some referral hospitals receive a central budget while others do not. Lines of authority and what information must be shared are very clear in the vertical disease control programs which are still controlled centrally by MOH. However, accountability, responsibility and sharing of information are less clear for general health services including the management of the general (non vertical disease-control program) medicines. Nevertheless, there is an extensive public health care system in which 42% of patients, covered by insurance, can receive health care free at the point of delivery. For the uninsured, health care and medicines may be very expensive. The various medicine policies that may impact on drug use and are in place are shown in table 4. This data was compiled from information found during the mission and as reported by the Country Pharmaceutical Profile sent by MOH to WHO Geneva in 2011 (Suryawati 2011).

Table 4: Medicine Policies in place in Indonesia according to the WHO Pharmaceutical Country Profiles Survey in 2011, with commentary from the mission findings.

Drug Policy	State of implementation
National Medicines Policy	Official document published and endorsed in 2006.
Monitoring the use of medicines	Annual monitoring of some prescribing indicators in the puskesmas by sub-Directorate of rational use of medicines.
Essential Medicines List	National EML 2008 exists but is only partially followed by the central MOH and not by many districts and provinces.
Standard Treatment Guidelines	National STGs for Puskesmas 2007 (which is currently being revised) but it is not used by many puskesmas doctors. No national STGs for hospitals.
Formulary	Indonesian National Information on all registered medicines but no National Formulary manual based on the national essential drug list
Generic Policies	Presidential decree that all prescribing in the public sector should be by generic name but this is not followed in many hospitals, especially referral hospitals.
Regulation of promotion of medicines	Monitoring of adverts pre and post marketing done by NADFC but other promotional activities not monitored.
Monitoring of ADRs	National pharmacovigilance centre in the NADFC which is an associate member of Uppsala WHO monitoring centre.
Payment for medicines	Medicines are provided free of charge to 42% of the population with health insurance but other patients must pay the full cost.
Health Insurance	About 40% population have government social health insurance and about 2% have private health insurance.
Revenue from medicines	Never used to pay salaries in the public sector.
Medicine Pricing policies	Prices of generic medicines fixed annually by MOH but all other medicines prices are set by the pharmaceutical manufacturer.
Undergraduate medical training	Pharmacology is taught in the pre-clinical years but does not include the national EML or STG for puskesmas in many universities.
Continuing medical education	Adhoc lectures are organized by the Medical Association with sponsored meals by the pharmaceutical industry. Indonesia medical council has introduced a credit system for re-licensing. Very little CME includes prescribing.
Medicines Information Centre	National medicines information centre is situated in the NADFC.
Public education on medicines use	Limited program of community empowerment focusing on self-medication and run by the MOH annually.
Drug and Therapeutic Committees (DTCs)	Most hospitals have a DTC but few function properly and most only develop a formulary (which often does not follow the national EML) for the hospital.
National Strategy for containing antimicrobial resistance	National strategy to contain antimicrobial resistance published in 2011 but antibiotics frequently available over-the-counter without prescription.

National Medicines Policy

A national medicines policy (NMP) document was first published in 1983 and revised most recently in 2006 (MOH 2006). The primary aim of the NMP is to assure sustainable fair distribution and affordability of medicines to achieve the highest standards for public health, and specifically:

i. Availability, fair distribution and affordability of medicines, particularly essential medicines;
ii. Safety, efficacy and quality of medicines and public protection from misuse and abuse of medicines;
iii. Rational use of medicines.

The policy document includes a comprehensive set of policies to achieve the objectives. Many parts of the NMP are being implemented such as the national EML, STGs for the puskesmas, monitoring of medicines use in the puskesmas, programmes to promote rational use of medicines, particularly in the community and regulation of the quality and safety of medicines. Most implementation of the NMP has fallen to the Directorate General of Pharmaceuticals and Devices and within this to the Directorates of Pharmaceutical Services and Public Supply, and to the National Agency of Drug and Food Control of the Republic of Indonesia (NADFC).

There are two main reasons why Indonesia has been relatively successful at implementing its National Medicines Policy. Firstly, the Directorate General of Pharmaceuticals and Devices established the Directorate of Pharmaceutical Services and the Directorate of Rational Use of Medicines - which have developed the national EML, STGs, Formulary, and have undertaken monitoring and interventions to promote rational use of medicines. Secondly, the drug regulatory authority was made semi-autonomous and independent and has been relatively well resourced so allowing it to work towards ensuring the quality and safety of medicines in the market. Nevertheless, serious problems of irrational use of medicines remain and it appears that promoting rational use of medicines may be given less priority in the future as the Directorate of Rational Use of Medicines has been downgraded to sub-Directorate level, with consequent less staff and resources. Furthermore, the bulk of the activity of the Directorates of Pharmacy Services and Rational Use of Medicines has been directed towards pharmacists and the community with relatively little action directed towards doctors. This is probably a major reason why more progress has not been made on promoting rational use of medicines, particularly in the hospital setting. It is the Directorate General of Medical Care that is responsible for doctors and hospital care. Oversight of implementation of DTCs in every hospital lies within the DG Medical Care. Unfortunately, the consultant was not able to meet any staff in this Directorate nor did any of them come to the workshop, so what their actions and successes to promote the rational use of medicines have been is unknown.

Coordination and Management

Within the Ministry of Health, there are 4 Directorate Generals (DGs) and two institutes as follows: DG Nutrition and Maternal Child Health; DG Disease Control and Environmental Health; DG Medical Care; DG Pharmaceuticals and Devices; National Institute of Health Research; and Human Resources for Health.

Within the DG Pharmaceuticals and Devices, there are the Directorates of Pharmaceutical Services, Public Supply, Standards of Pharmaceuticals and Medical Devices. The Directorate of public supply operates the procurement and distribution of buffer drug stocks. The Directorate of Standards of Pharmaceuticals develops the Indonesian pharmacopoeia and works on a prequalification program. Within the Directorate of Pharmaceutical Services, there are four sub-Directorates, as follows:

1. Rational use of medicines - that monitors medicines use in the puskesmas, runs a training of trainers for doctors and pharmacists in districts and a community; empowerment program;
2. Clinical pharmacy - that trains hospitals pharmacists in good pharmaceutical care
3. Community pharmacy - that trains community pharmacists (in the puskesmas) in good pharmaceutical care;
4. Standardisation of Pharmaceutical Services - that develops the national essential medicines list, the national formulary, the national STG for the puskesmas and STGs on good pharmaceutical care for pharmacists.

Thus, there is great effort directed towards pharmacists. Even so, few pharmacists met were able to monitor consumption, perform ABC analysis, analyzing drug consumption data or undertake drug utilization review in order to inform planning, sensitize hospital administrators and doctors and be more effective in hospital DTCs. While much effort has been directed towards improving pharmaceutical care, equal effort directed towards doctors and compliance with guidelines was not seen. Thus, there are no national STGs for hospital care, many medical schools do not appear to have their own STGs, teaching of clinical pharmacology is often minimal and there is very little or no monitoring of medicines use in hospitals.

Promoting rational use of medicines and implementing national drug policy requires coordination between multiple stakeholders. Much could be gained by sharing of information and pooling of resources between different directorate generals, particularly those of Medical Care and Pharmaceuticals and Devices. Doctors and pharmacists should work as a team to ensure rational sue of medicines. Likewise, there is a need for the DGs of Medical Care (mainly responsible for doctors) and Pharmaceuticals and Devices (mainly responsible for pharmacists) to work together. Other DGs may also play a role such as the DG Nutrition and Maternal Child Health which operates many community health programs. Currently, there is no forum for these different DGs to meet either together or with other important stakeholders, such as the NADFC, the Medical and Pharmacy Councils, the insurance agencies and the Ministry of Education responsible for Schools of Medicine, Pharmacy and Nursing. It was suggested during the workshop that such a forum be convened by the Secretary General for Health, and that perhaps such a forum could be guided by a mandated national multidisciplinary steering group. If such a forum existed, coordinated planning on how to implement the national medicines policy could be undertaken and duplication of effort or conflicting actions by different directorates or partners avoided.

Coordination is particularly important in the current climate of decentralization. There is no need for every province and district to reinvent the wheel in developing their own best practices with regard to formulary and guideline development and procurement and distribution practices. The role of MOH is to guide and coordinate policy in order to facilitate good practice in the provinces and districts. However, this is more difficult if the different parts of MOH and other relevant ministries and institutions are not themselves coordinated. Examples of coordination needed include the one-gate policy between the Directorate of Public Supply and the vertical disease control programs and the licensing of wholesalers and retailers by MOH or local government on the recommendation of the NADFC.

With regard to coordination with local government, the NADFC has an advantage over the MOH in that it does have branch offices in every province and authority with regard to the quality and safety of medicines. Being independent, NADFC is able to retain staff and develop their expertise. In contrast, within the MOH, there is a policy to rotate staff which means that Directors have to learn from scratch with each transfer. The junior staff are also transferred so one may end up with a situation where nobody knows what to do for certain situations. This is particularly difficult in a directorate like public supply because the work is very technical. Increasingly, in all countries, there are well meaning administrative and financial initiatives to improve efficiency. For example, monopolies commissions often object to me-too drugs not being considered for registration because of the potential for decreasing competition - irrespective of the fact that there may 300 brands of the same generic entity already on the market and that this causes much greater work for the regulatory authority and health workers in selecting appropriate drugs. Financial regulations may require that the lowest bidder in all drug tendering procedures be chosen irrespective of whether the supplier is able to supply in a timely manner. Such issues are highly technical and require an experienced staff within the concerned departments to explain to non-specialist policy makers what is needed.

Possible Solutions

1. Institute a coordinating mechanism under the MOH:
    - To bring together the DGs of pharmaceutical services, Medical Care, other relevant DGs in MOH, NADFC, Ministry of Education, health professional bodies and insurance agencies in order to resolve issues;
    - Under the leadership of the most senior person in the Ministry of Health, possibly the Secretary General for Health;
    - Guided by a mandated multidisciplinary steering committee.

2. Strengthen &/or establish unit(s) within the DGs of Pharmaceutical Services and Medical Care to monitor medicines use and promote rational use of medicines, that:
    - target doctors as well as pharmacists;
    - have sufficient capacity to monitor drug consumption, drug use, DTC activities, continuing medical education and public education.

3. MOH Directorates to liaise with Human Resources for Health to improve human resource management and rotation policies:
    - to ensure adequate technical capacity in dept / units at all times

4. MOH to liaise with other networks and organizations to undertake public and provider education, for example:
    - the Indonesian Health Council which should include prescribing and/or drug management, as relevant, in the credit system for continuing Medical Education for relicensing;
    - national professional organisations, MOH health promotion units, insurance companies, Ministry of Education, etc, which could spread core messages on drug use to the community.

Workshop

At the end of the mission, a one-day workshop was held on July 21st with 38 national stakeholders to discuss the consultant's findings and to develop recommendations. The participants in the workshop can be seen in annex 2. The consultant's presentation at the workshop can be seen in annex 3.

Objectives of workshop

- Review the WHO fact finding results;
- Identify the main priority problems to be addressed;
- Formulate recommendations to resolve / address the problems;
- Facilitate the development of plans to:
  - implement recommendations, and
  - incorporate recommendations into the national health plan for sustained implementation and follow up.

Agenda

- Presentation of the Country Pharmaceutical Profile 2011 by Dr Sri Suryawati of Gadjah Madjah University;
- Presentation of the findings by the WHO consultant, Dr K. Holloway, with discussion of the findings and identification of main problems and possible solutions;
- Plenary discussion and finalization of recommendations,
  - Road map for MOH, stakeholders and WHO to follow.

The Directorate General of Pharmaceuticals and Devices, together with the Director of Public Supply, attended the workshop. Unfortunately there was very little representation from the Directorate of Pharmaceutical Services and no representation from the either the sub-Directorate of Rational Use of Medicines or the Directorate General of Medical Care. Four groups developed recommendations, each working on one topic area as follows:

- drug supply,
- selection and rational use,
- regulation and
- drug policy and coordination.

There was a lively discussion and the stakeholders agreed with the most of the consultant's findings and recommendations. During the workshop, recommendations were agreed by consensus in plenary discussion. Following the workshop, the recommendations were edited (for language and coherence) and circulated to all the stakeholders. The following conclusions and recommendations were agreed by all stakeholders and incorporate all comments from the workshop participants.

Recommendations

A. Medicines Supply

1. Establish an electronic drug management inventory system and expand to all the provinces, districts and hospitals:
   - will provide data for quantification and data on inconsistencies in drug supply between provinces and districts but will require capacity building for districts in undertaking ABC-VEN analysis;
   - could expand the MOH pilot system or use existing IT systems.

2. Establish a requirement for all districts and hospitals to report annual drug consumption to provinces and to MOH.

3. Strengthen the one-gate policy for drug supply;
   - Covering general and disease control drugs.

4. Strengthen drug supply management and selection in the districts, ensuring that a pharmacist is given a lead role.

5. MOH to start dialogue with the pharmaceutical industry on price controls for branded generic as well as generic drugs

6. Start a dialogue with provinces and districts on pooled procurement to achieve economies of scale, which:
   - could be within provinces initially and between provinces later;
   - should be based upon best practices identified within the province (i.e. good practices in some districts should not be sacrificed);
   - will be facilitated by using consumption data as evidence for advocacy;
   - will require and could facilitate more consistency between EMLs (see selection).

B. Health Insurance

7. Reduce the number of items on the various insurance lists, including ASKES, and try to harmonize with the national EML.

8. Institute maximum reimbursement prices for all medicines.

9. Consider, changing the ASKES system from one of reimbursement to the pharmacist, hospital, puskesmas or GP to one of reimbursement to the patient - such that the patient would have to pay first and claim later. In such a system, a copayment for the patient (e.g. 20% copayment by the patient who would only be reimbursed 80% of the costs) could be introduced and costs contained.

C. Medicines Selection and Consumption

10. Establish an electronic inventory management system for all hospitals & districts:
    - For better estimation / forecasting of drug need;
    - To identify high and irrational drug consumption (ABC analysis) for feedback to prescribers.

11. Require every province and district to produce an annual report on consumption:
    - In terms of quantity and cost for each line item;
    - In order to make comparisons by per capita, therapeutic class, province, health facility and district so as to identify high cost line items and high consuming facilities where monitoring can be concentrated.

12. Harmonize all medicine lists across provinces/districts:
    - Dialogue can be started if consumption data is available.

13. Provide the National Essential Medical List and Formulary free to all provinces and districts:
    - With an explanation of how evidence was used and encouragement for them to use the national EML in developing their own formularies.

D. Medicines Use

14. Strengthen the sub-Directorate on rational use of medicines in order for it to be better able to monitor drug use and implement scaled-up interventions targeting doctors as well as pharmacists.

15. Monitor drug use:
    - Using ABC analysis, prescription audit and feedback within facilities as well as well as by MOH;
    - By encouraging collaboration between DTCs, medical and pharmacy schools who could provide students to do the needed drug use studies.

16. Implement Standard Treatment Guidelines, which includes:
    - Developing national hospital STGs and continuing to update the national PHC (puskesmas) STG;
    - Disseminating STGs directly free of charge to every doctor;
    - Incorporating STGs into Continuing Professional Development and undergraduate curricula.

17. Strengthen DTCs:
    - to monitor drug use, encourage CPD, and report annually on activities to MOH;
    - by requiring greater doctor participation, possibly by incorporating them as sub-committees in Medical Committees;
    - in DHOs as well as district hospitals, the latter aiding the former as DHO DTCs may need the help of more senior hospital doctors.

18. Strengthen Continuing professional development (CPD) by:
    - incorporating prescribing, the essential medicines concept and prescription audit and feedback into the Indonesian Medical Association credit system for CPD;
    - Involving the medical and pharmacist associations and the health insurance agencies in spreading messages on rational use of medicines through the lectures they organise e.g. on puyer.

19. Strengthen undergraduate education:
    - which should include clinical pharmacology and prescribing in the curriculum of clinical studies;
    - by MOH, together with the Medical Council, establishing a policy to include clinical pharmacology in clinical studies and arranging for a suitable curricula to be developed.

20. Undertake national public education campaigns that could:
    - include core pharmaceutical messages such as "does my child need more than one drug?" or "Medicines packaged from companies are safer than puyer";
    - be given through the Maternal Child Health units, schools, medical and pharmacy associations and the media (insurance companies may pay for this).

E. Medicines Regulation

21. Advocate for a review of the regulations concerning wholesalers and retail pharmacies such that NADFC has the power to at least freeze the licenses of those who transgress the regulations.

22. Improve the liaison between NADFC and those who grant licenses, including MOH and local governments, perhaps by involving local government in monitoring, so that NADFC recommendations concerning licenses for transgressors are followed.

23. Work towards having fewer brands of same drug (active pharmaceutical ingredient) in the market by:
    - Avoiding registering or reregistering inappropriate fixed-dose combination drugs e.g. metampiron+diazepam, chlorpheniramine+dexamethasone, dextramethorphan+phenylpropranolamine+chlorpheniramine+paracetamol;
    - Harmonizing drug lists both with regard to generic and branded products so as to reduce the market for extra branded generics.

24. Publish easy information on the NADFC website on drug testing results to convince prescribers about the quality of generic drugs.

25. Monitor inappropriate drug promotional activities in collaboration with MOH and professional bodies and councils; such action could include:
    - Banning medical representatives from public facilities before 2pm;
    - Banning inappropriate financial incentives or promotional holidays;
    - Requiring companies to disclose their marketing activities and budgets.

F. Medicines Policy and Coordination

26. Institute a coordinating mechanism under the MOH:
    - To bring together the DGs of pharmaceutical services, Medical Care, other relevant DGs in MOH, NADFC, Ministry of Education, health professional bodies and insurance agencies in order to resolve issues;
    - Under the leadership of the most senior person in the Ministry of Health, possibly the Secretary General for Health;
    - Guided by a mandated multidisciplinary steering committee.

27. Strengthen &/or establish unit(s) within the DGs of Pharmaceutical Services and Medical Care to monitor medicines use and promote rational use of medicines, that:
    - target doctors as well as pharmacists;
    - have sufficient capacity to monitor drug consumption, drug use, DTC activities, continuing medical education and public education.

28. MOH Directorates to liaise with Human Resources for Health to improve human resource management and rotation policies:
    - to ensure adequate technical capacity in dept / units at all times

29. MOH to liaise with other networks and organizations to undertake public and provider education, for example:
    - the Indonesian Health Council which should include prescribing and/or drug management, as relevant, in the credit system for continuing Medical Education for relicensing;
    - National professional organisations, MOH health promotion units, insurance companies, Ministry of Education, etc, which could spread core messages on drug use to the community.

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Presentation of *Pharmaceutical Services Policy in East Region*, by Dir. of Pharmaceutical Services DG of Pharmaceutical and Medical Devices MoH. Palu May 2011

Presentation of *Pharmaceutical Services Policy in Central Region*, by Dir. of Pharmaceutical Services DG of Pharmaceutical and Medical Devices MoH. Balikpapan, June 2011

Annex 1: Persons met and places visited during the situational analysis:

SN	Name	Institution
Central government, Jakarta		
1	Lucky Slamet	Deputy DG, Therapeutic Products Control NADFC
2	Yulia Purwarini	Registration, NADFC
3	Retno Tyas Utami	Director GMP inspection, NADFC
4	Moriana Hutabarat	Pharmaceutical Standards, NADFC
5	Siti Asfijah Abdulah	Pharmacovigilance NADFC
6	Engko Sosialine M	Director of pharmaceutical Services, MoH
7	Hidayati Mas'ud	Chief of Sub directorate Rational Use of Medicine, MoH
8	Sari Mutiarani	Staff at Dir, Pharmaceutical Services, MoH
9	Vita Haloho	Staff at Dir, Pharmaceutical Services, MoH
10	Sri Indrawaty	DG of Pharmaceutical and Medical Devices, MoH
11	Nasirah Bahaudin	Director of Medical Devices, MoH
12	Setiawan Suparan	Director of Medicine's Public Supply, MoH
13	T Bahdar J Hamid	Director of Pharmaceutical production /distribution, MoH
14	Dara Amelia	Directorate Pharmaceutical Services, MoH
15	Vita P Haloho	Directorate Pharmaceutical Services, MoH
16	Sherli	Sub directorate Immunization, MoH
17	Prihatiwi Setiati	Dit. Med's Public Supply, MoH
18	Retno Dewi M	Dit. Med. Public Supply
19	Eli Wirandi	Sub dit. AIDS, DC-EH
20	Pakuntungan	Subdit HIV/AIDS, DC-EH
21	Clara Benarto	CHAI
22	Asik	Subdit TB, CD-EH
23	Desak Made	Sectr DG of DC-EH
24	Husni Mochtas	Sectr DG of DC-EH
25	Siti Andra	Subdit Malaria, DC-EH
26	Himawan	Sectr DG Pharmaceutical
27	Myta Suzana	Dit Med Public Supply
Cipto Mangunkusomo National Referral Hospital (CMNRH), private pharmacy, AKSMAS and private insurance agencies, medical /pharmacy associations, Jakarta		
28	Dr. Zunilda	Pharmacologist, (CMNRH), Jakarta and Medical Council
29	Prof Dr Armen	Chief Pharmacologist and Chair of DTC,

	Muchtar	CMNRH
30	Dra. Yulia Trisna	Chief Pharmacist, CMNRH
31	Dra. Yusti Yuswati	Pharmacist, Jamkesmas OPD, CMNRH
32	Ines Sopinarko, SFarm	Pharmacist, non-insured patients OPD, CMNRH
33	Titin Yulianti	Pharmacist, Imphi Apotek private pharmacy, Jakarta
34	Maya Amiarny Rusady	General Manager, ASKES Health Insurance
35	Umbu M Marisi	Operational Director, ASKES Health Insurance
36	Ulian T Malik	PT. AXA Life Indonesia and Chairma LOMA Society Indonesia
37	Dr Namita Jaggi	ARTEMIS Medicare Services Ltd
38	Drs M Dani Pratomo	President, Indonesian Pharmacists Association
39	Dr Nanny Nusalim	President, INTEGRA welfare solutions
40	Purnamawati	Yayasan Orang tua Peduli (YOP) (Foundation of Parent Caring)
School of Medicine UnHas, School of Pharmacy UnHas, Wahidin teaching hospital Makasar, Sulawesi Selatan		
41	Prof. dr Peter Kabo	Professor in Pharmacology and cardiology
42	Dr. Haribah	Ophthalmogist, lecturer
43	Dr. Abdul Kadir	ENT, Director of Wahidin teaching hospital
44	Dr. Fatmawati	Chairman of DTC hospital
45	Dr Robert	Pharmacologist, lecturer
46	Dra Sumarheni	School of Pharmacy lecturer
47	Dr Rafiya	Dept of Anatomi
48	Dra. Mariah	Vice Dean School of Pharmacy
49	Dr Mardinia	Obs and Gyn, lecturer
50	Dr. Mansyur	Lecturer
51	Drs Abdul Rahman	Pharmacist , molecular tox, lecturer
52	Dr. Budu	Vice Dean School of Medicine, UnHas
Maros district and Makassar municipality, Sulawesi Selatan		
53	Agus Hamang SKM	Head of Pharmacy Service DHO, Maros
54	Lilis Sukmawati	Pharmacist, District Warehouse, Maros
55	Thomas Salewangan	Pharmacist Jamkesmas OPD, Maros District hospital
56	Eddie Haidir	Pharmacist, Non-insured patients OPD, Maros District hospital
57	Dr. Edhie Mochtar MARS	Medical Director, Maros District hospital
58	Dr. Hj. Fitri Adhicahya	Doctor-in-charge, puskesmas Alliritengae
59	Tina Novita Pharm	Pharmacist, puskesmas Alliritengae

60	Mr Akbar Aziz	Kimia Farma, Makasar & SMK Kesehatan Plus (School for pharmacy technicans)
61	Mrs Hadijah Tahir	Pharmacist, Wahidin teaching hospital, Makasar
62	Ibu Yuyun	Pharmacist, Province Warehouse and Lala Pharma,
63	Fahmiani SKM	Province Secretary of Health
64	Dr H Rachmat Latief	Chief, Provincial Health Department
Batam and Tg Pinang, Kepulauan Riau Province		
65	Ali Chozin	Pharmacist, Pharmacy section DHO Batam
66	Dr. Fadilah	Director, Batam district hospital
67	Fatima Embung	Batam district hospital
68	Sri Hendri Yeni	Batam district hospital
69	Riyaldi	Doctor-in-charge, Belakang Padang puskesmas
70	Zulhelmi	Pharmacist-in-charge, Belakang Padang puskesmas
71	Ningsih Rezeki, Pharm	Pharmacist, Midiyato private naval hospital, Tg Pinang
72	Dr Jupri Tang	Doctor-in-charge, Tg Pinang puskemas
73	Fitriyana	Pharmacist-in-charge, Tg Pinang puskemas
74	Mr Henri Sumando	Kimia Farma, Tg Pinang
75	Mohammed Bisri	Chief, Dept Health Services, medicine and food control, Kep Riau
76	Dr. Sulastri	Pharmacy section PHO Kep Riau
77	Mimi	Province Warehouse Kep Riau
78	Indri	Province Warehouse Kep Riau

Annex 2: Participants of Workshop on Medicines Supply and Rational Use - Jakarta, Indonesia, 21 July 2011

	Name	Institution
1.	Sri Indrawaty	DG of Pharmaceutical MoH
2.	Setiawan Suparan	Director of Med Public Supply, MoH
3.	Suwarti Wasugai,	Wahidin Hospital Makasar
4.	Lia Amalia	School of Pharmacy ITB, Bandung
5.	Endang L Narang	PHO Central Kalimantan
6.	Khancit L	WR Indonnesia
7.	M. Shahjahan	HSD WCO Indonesia
8.	Steven Harsono	Clinton Foundation
9.	Meuthia Handayani	National referral hospital Jakarta
10.	Dara Indry	PHO Jakartadara_
11.	Sus Maryati	Ind Pharmacy Association
12.	Zunilda	National referral hospital, Jakarta
13.	Clara Benarto	Clinton Foundation
14.	Saleh N	School of Pharmacy ITB, Bandung
15.	Sari Mutiarani	Dit. Pharmaceutical Services, MoH
16.	Syafrizal	Pharmaceutical MoH
17.	Rahbudi Helmi	Pharmaceutical, MoH
18.	Purnamawati	YOP
19.	Nurlaeli Ismaini	Pharmaceutical, MoH
20.	R. Dettie Yuliati	Pharmaceutical, MoH
21.	Purwantyastuti	Dep. Pharmacology, School of Med. UI
22.	Retnosari A	School of Pharmacy UI
23.	Sri Angky	Ind Medical Council
24.	Rostilawati Rahim	Med Public Supply MoH
25.	Budu	School of Medicine UnHas Makasar
26.	Russell Vogel	JSI National Director Indonesia
27.	Ikka Tjahyaningrum	Pharmaceutical, MoH
28.	Sulastri	PHO Kep. Riau
29.	Vita Haloho	Pharmaceutical Services
30.	Irma Melyani	School of Pharmacy Unpad, bandung
31.	Togi Hutadjulu	NADFC
32.	Fauqi Elfarabi	NADFC
33.	Yulia	National referral hospital, Jakarta
34.	Roy Himawan	Secrt DG Pharmaceutical
35.	Siti Subiantari	WCO INO
36.	Setyanti indah L	Sectr DG Pharmaceutical
37.	Yunida	NADFC
38.	Poniyem	Secrt Pharmaceutical

Annex 3: Slide presentation given by consultant to stakeholders in the 1-day workshop

Medicines supply and use in Indonesia:

WHO mission: 10-23 July 2011

Dr Kathleen Holloway
Regional Advisor in Medicines, WHO/SEARO

Agenda of the workshop

- Presentation by WHO with discussion of findings, identification of main problems and possible solutions
- Group work to discuss solutions and develop recommendations to implement solutions
  - include practical steps and the human and financial resources needed
- Presentation of group work with plenary discussion and finalization of recommendations
  - Road map for MOH, stakeholders and WHO to follow

Background

- **Irrational use of medicines in all countries of the region**
  - Decentralised system for drug supply in Indonesia
- **July 2010 regional meeting in SEARO attended by 9 countries**
  - Recognised the need for a comprehensive health system approach to promote rational use of medicines
  - Recommended undertaking a national situational analysis to identify the major problems and possible solutions in order to develop national action plan
- **Situational analysis**
  - WHO fact finding mission, 10-23 July, 2011
  - Workshop to develop recommendations for national plan of action, to incorporate into national health plan

Mission 11-22 July, 2011

11 July: Briefing with WR, NADFC, Directorate Pharmaceutical Services, incl. Sub-Directorate RUM;
12 July: DG Pharmaceuticals & Medical Devices, Directorate Public Supply incl. central warehouse;
13 July: Jakarta - Makassar: Schools of Medicine & Pharmacy, Dr Wahidin Sudirohusodo Teaching hospital, private pharmacy
14 July: Maros: District hospital, Pukesmas, private pharmacy;
15 July: Makassar - Jakarta: National; Referral Hospital Hospital – dept clinical pharmacology & polyclinic;
16 July: Jakarta: Private pharmacy;
17 July: Jakarta – Batam;
18 July: Batam: District hospital, Pukesmas, private pharmacy;
19 July: Bintan: Provincial health office & warehouse; Pukesmas
20 July: Batam - Jakarta: Health Insurance Companies, Professional Associations & Medical Council;
21 July: Workshop;
22 July: Debriefing with WR.

Objectives of the workshop

- Review the WHO fact finding results
- Identify the main priority problems to be addressed
- Formulate recommendations to resolve / address the problems
- Develop plan to:
  - implement recommendations, and
  - incorporate recommendations into the national health plan for sustained implementation and follow up

Mission findings

- Extensive health care system, with substantial infrastructure, trained health care personnel and relatively good health indicators, but…
- Serious problems in the pharmaceutical sector concerning:
  - Drug supply and use, information and coordination, but…
- Sufficient resources and capacity to address the problems

Drug Supply

- Decentralised system so no economies of scale
  - MOH supplies 70-90% drugs budget to districts for Pukesmas
  - Provincial & District local govt supply drugs for use in hospitals
  - Teaching hospitals procure their own drugs
- Every province, district and teaching hospital has its own formulary, often with more drugs than national EML
- Central MOH and provinces operate a buffer stock system
  - for use in emergencies, epidemics & frequent charitable purposes
- Procurement from local wholesalers, done by tendering at central level & from the local branches at provinces
- Quantification done on previous year's consumption
- New one-gate policy for drug supply
- Currently no electronic management inventory system
  - but plans to pilot one in 115 districts

Analysing drug consumption

Facility or Area		Top 15 – 30 drugs		ABs	VITs
		% budget	% EML	% budgt	% budgt
Teaching Hospital June 2011	IPD	39% (1% items)	20%	-	-
	OPD	27% (1% items)	15%	-	-
District 1: 2010		58% (13% items)	60%	32.5%	5.5%
District 2: 2010		69% (15% items)	57%	41.4%	18.5%
District hosp: 2010		38% (7% items)			
Private pharmacy 1: June 2011		16% (1% items)	23%	-	-
Private pharmacy 2: June 2011		13% (1% items)	0%	-	-

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Possible solutions for selection

- Electronic inventory management system for all hospitals & districts
  - Better estimation / forecasting of drug need
  - ABC analysis for feedback to prescribers
- Every province and district should produce an annual report on consumption
  - In terms of quantity and cost for each line item
  - Comparison can be made by per capita, therapeutic class, province, health facility & district to identify high cost line items & high consuming facilities where monitoring can be concentrated
- Harmonisation of EML across provinces/districts
  - Dialogue can be started if consumption data available
- Provide National Essential Medical List and Formulary free to all provinces and districts
  - Explain how evidence was used and encourage them to use it in developing their own formularies, based on the national EML

Drug selection and consumption

- National EML updated every 3 years – last one in 2008 and new one in development
  - 323 chemical entities
  - Transparent evidence-based process involving 109 experts
  - List different according to the type of health facility
- MOH, provinces, districts, hosps only partially follow EML
  - MOH supply follows the generic list which has extra drugs to EML
  - All provinces, districts and hospitals have their own EMLs
  - Many providers in provinces/districts had not seen national EML
  - Maros district 2010: 68% budget from central govt; > 50% local govt budget spent on non-EML multi-vitamins
  - Batam district 2010: 89% budget from central govt; 100% local govt budget spent on non-EML drugs, 29% of which were vitamins
  - Jakarta teaching hosp govt pharmacy for non-insured patients: 85% of top 20 drugs by value are non-EML

Drug use

- MOH has produced STGs for Puskesmas but often prescribers not using them and no national hosp STGs
- Daily pharmaceutical representatives visits to doctors
- Pharmacology taught in pre-clinical studies but not during clinical studies where poor prescribing learnt from seniors
- CPD undertaken by all prescribers
  - All doctors need 250 credits every 5 years to get re-licensed, but
  - Topics chosen on adhoc basis often in association with sponsored dinners & do not include rational use of medicines, essential medicines concept or prescribing
- Drug & Therapeutic Committees not functioning properly
  - Meet few times a year or less to make a formulary & print it
  - Sometimes discuss out-of-list and non-generic prescribing
- MOH RUM sub-directorate doing community education
  - sensitizing workshops with pharmacists and doctors in districts & some small-scale projects on consumer-empowerment

Drug use indicator survey

Drug use indicator	Referral hosp n=2	District hosp n=2	PHC n=3	Retailer n=4
Av.no.drugs/patient	2.56	3.04	3.26	2.53
% patients with ABs	34.2%	54.9%	44.7%	33.6%
% patients with INJs	4.1%	3.0%	0%	7.8%
% patients with VITs	35.4%	30.2%	52.3%	39.4%
% patients with Steroid	9.4%	21.3%	21.3%	18.6%
% generic drugs	55.9%	80.0%	95.4%	26.9%
% EML drugs	44.5%	61.2%	90.5%	36.7%
% drugs dispensed	91.9%	90.4%	99.5%	94.3%
Av.cost/Px (Rupiya)	71,646	30,086	-	147,543

Possible solutions for improving use (2)

- Continuing professional development (CPD)
  - Indonesian Medical Association credit system for CPD should include incorporation of prescribing, essential medicines concept and prescription audit & feedback
  - Involve the medical and pharmacist associations in spreading messages on rational use of medicines through the lectures they organise e.g. on puya
- Public Education
  - Core pharmaceutical messages e.g.
  - "does my child need more than one drug?"
  - "Medicines packaged from companies are safer than puya"
  - Could be given through the Maternal Child Health units, schools, and the media (insurance companies may pay for this)

Irrational use observed

- Puya: 2-8 drugs - in all facility types
  - 8-25% of patients get puya
  - Chlorpheniramine, paracetamol, vitamin BC, vitamin C, glycerol guaiacolate
  - Amitryptyline, diazepam, paracetamol
  - Codeine, chlorpheniramine, methylprednisolone, cetirizine, phenylpropranolamine, salbutamol
  - Mixer not cleaned, measuring out doses done by eye
- % upper respiratory tract infection cases receiving antibiotics in 30 cases in 3 pukesmas: 56%
- Labelling of drugs
  - Name of patient and dosing
  - No drug name or strength unless written on a strip packet

Drug regulation

- Big pharmaceutical sector
  - 204 manufacturers, 2114 wholesalers, 14 429 retail pharmacies, 8729 drug stores
  - 15,072 products registered (12,552 currently in the market)
- National Agency of Drug and Food Control (NADFC)
  - Semi-autonomous, reporting directly to the President
  - 3780 staff, 1500 at the central level & rest in provinces
- Main problems mentioned
  - Too few staff in provinces to do frequent inspections
  - Monitoring of drug adverts but not promotional activities
  - Too many brands on the market (>300 brands of amoxycillin & paracetamol) so difficult for regulation, selection and use
  - Prescribers still distrust the quality of generic drugs
  - NADFC must monitor but can only recommend to MOH or local government whether to issue issue or revoke licenses of wholesalers, retailers (unlike for manufacturers where the law was changed giving the NADFC power to issue licenses)

Possible solutions for improving use (1)

- Monitoring drug use
  - ABC analysis, prescription audit and feedback within facilities as well as by MOH
  - Encourage collaboration between DTCs, medical and pharmacy schools who could provide students to do drug use studies
- Standard Treatment Guidelines
  - Develop national hospital STG & continue to update national PHC (Pukesmas) STG
  - Disseminate STG directly free of charge to every doctor
  - Incorporate STGs into Continuing Professional Development
- Strengthen DTCs
  - to monitor drug use, encourage CPD, and report annually on activities to MOH
  - Could be incorporated as sub-committees in Medical Committees
  - Similar committee needed in DHOs, maybe with help of district hospital (needs involvement of medical doctors)

Recommendations: Regulation

- Work towards having fewer brands of same drug (active pharmaceutical ingredient) in the market
  - Avoid registering inappropriate fixed dose combination drugs e.g. metampiron+diazepam, chlorpheniramine+dexamethasone, dextramethorphan+phenylpropranolamine+chlorpheniramine+paracetamol
  - (Harmonisation of drug lists with brands would help this process)
- Monitor inappropriate drug promotional activities in collaboration with MOH and professional bodies & councils
  - Ban medical representatives from public facilities before 2pm
  - Ban inappropriate financial incentives or promotional holidays
  - Require companies to disclose their marketing activities and budgets
- Publish easy information on website on drug testing results
  - to convince prescribers about drug quality
- Improve liaison with MOH and local govt on issuing licenses
  - Work towards a new law to enable the NADFC to freeze licenses of transgressing wholesalers and retailers

National Drug Policy

- National Drug Policy published in 2006
- Comprehensive set of policies being implemented by MOH, mainly Directorate of Pharmaceutical Services & NADFC
- Many parts of the NDP implemented e.g. EML, Formulary, STGs, but ….
  - Serious irrational use of medicines
  - Non-implementation of EML
  - Lack of monitoring of drug consumption or use
  - DTCs not functioning properly
- Problem of coordination between MOH and local government in the decentralised system
  - Technical expertise for some activities cannot be in every district
  - MOH's role is to guide and coordinate but it can only do so if given information from the provinces and regions

Group work

- Each group to draft recommendations with practical steps including
  - Who will do it
  - Resources needed
- Groups
  - Health & Medicines policy and coordination
  - Medicines supply and financing
  - Drug selection & Promoting rational drug use
  - Medicines regulation

Coordination and management

- Under MOH, there are 6 units
  - 4 Directorate Generals: Pharmaceutical Services; Medical Care; Nutrition and Maternal & Child Health; Disease Control
  - 2 units: Nat. Inst. Health Research; Human Resources for Health
- Promoting rational use of medicines and improving drug management requires a multi-disciplinary approach but:
  - DG Pharmaceutical care mainly focused on pharmacists & PHCs
  - DG Medical Care mainly focused on doctors & hospitals
  - DG MCH not involved in community education on drugs
  - Rotation of staff such that there may be no experienced technical staff member in the concerned DG e.g. pharmacist experienced in procurement in dept public supply and also in DHOs
  - MOH and NADFC coordination needed for licensing
  - MOH and MOE coordination needed for educational policy, school programs, etc
  - Liaison between local governments and MOH

Possible solutions for coordination & policy

- Institute a coordinating mechanism under the MOH whereby:
  - the DGs of pharmaceutical services, Medical Care, other relevant DGs in MOH, NADFC, MOE, health professional bodies may be brought together to resolve issues
  - possibly through the most senior person in the Ministry of Health
  - guided by a mandated multidisciplinary steering committee
- Strengthen &/or establish unit(s) within the DGs of Pharmaceutical Services and Medical Care to promote rational use of medicines:
  - engage both doctors as well as pharmacists,
  - sufficient capacity to monitor drug consumption, drug use, DTC activities, continuing medical education and public education
- Liaise with Human Resources for Health to improve human resource management and rotation policies
  - to ensure adequate technical capacity in dept / units at all times
- MOH to liaise with other networks and organisations to undertake public and provider education
  - national professional organisations, MOH health promotion units, insurance companies, Ministry of Education, etc