

# PHARMACEUTICAL MANAGEMENT ASSESSMENT AT 20 PUSKESMAS IN EAST JAVA

( *Malang and Pasuruan : An indicator approach* )

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## ABSTRACT

An analysis of indicators covering patient access, drug use, drug budget and pharmaceutical logistic to assess the advance in pharmaceutical management at 20 Public Health Centres in Malang and Pasuruan Districts, East Java has been conducted. Out of 1997/1998 Laporan Pemakaian - Lembar Permintaan Obat (LP-LPO). Drug-use Report and Drug-request Form), according to the Ministry of Health and Statistical Bureau secondary data, it can be computed and concluded that : (1) ratio of population per Puskesmas was 37.346, (2) ratio of population per registered pharmacist of pharmacy technician in the public sector was 32.771, (3) ratio of population per authorized prescriber (physicians, dentists, nurses and midwives) in 1996 was 1.821, (4) average number of drugs prescribed per curative outpatient encounter was 3.3, (5) percentage of outpatients given injections was 23% and (6) percentage of outpatients given antibiotics was 41%, (7) MOH budget on pharmaceutical per capita within 1997/1998 in East Java was Rp. 727.69 and (8) average ercentage of time out of stock for a set of indicator drugs in 20 Puskesmas storage was 7,60%.

**Keywords :** *pharmaceutical management, indicator approach*

## INTRODUCTION

An assessment of pharmaceutical management through some indicators at 20 Puskesmas (Primary Health Centre) in District Malang and Pasuruan, East Java, may serve as an approach for rapidly assessing pharmaceutical management system and program. Rapid assessment should results in an analysis of why the probrlem that exist have come to pass, which problems can be solved and what intervention are feasible in term of cost effectiveness and sustainability.

This article presents a set of eight indicators, grouped under three topics of Rapid pharmaceutical Management Assessment (1) concerning Patient Access and Drug Utilization, Ministry Of Health Budget and Finance as well as Ministry of Health pharmaceutical Logistics with two objectives, i.e. (1) To monitor pharmaceutical management on a regular basis at Puskesmas and (2) To standardize measurements of a local pharmaceutical management.

Data were collected from 20 Puskesmas in 2 districts (Pasuruan and Malang) in East Java in the year of 1997/1998, including secondary data.

## METHOD AND MATERIALS

A retrospective assessment of pharmaceutical management through some indicators was conducted at 20 Puskesmas in District Malang and Pasuruan that may not be valid at other Puskesmas in Indonesia. The assessment, conducted according to WHO '95, covers the number of population per functional Puskesmas, registered pharmacy technician and prescriber respectively, the average number of drugs prescribed, percentage of outpatients prescribed injections and antibiotics, MOH budget on pharmaceuticals per capita and the average percentage time out of stock for a set of indicator drugs. Data of 10 Puskesmas out of each district were collected from the most recent report published by the authority, the population data, Profil Kesehatan Indonesia 1998, the medical records, the indicator drugs-list developed by Ditjen POM and the LP-LPO.

### *Operation Definition*

The indicators involved can be defined as follows :

- Population per functional Puskesmas that dispenses drugs in East Java, is the ratio of population to any fixed Puskesmas that drugs to inpatients or outpatients.
- Population per registered pharmacist or pharmacy technician in the public sector in East Java, is the ratio of population to any pharmacist or pharmacy technician who work full or part-time in Puskesmas.
- Population per authorized prescriber in the public sector in East Java, is the ratio of population to authorized physicians, dentist, nurse and midwives.
- Average number of drugs prescribed per curative outpatient encounter in 20

Puskesmas is the average of the number of drugs prescribed, where each drug written separately is counted as a separate drug prescribed.

- Percentage of outpatients prescribed injections at 20 Puskesmas is the percentage of outpatients given intravenous or intramuscular drugs for curative encounters.
- Percentage of outpatients prescribed antibiotics at 20 Puskesmas is the percentage of outpatients given antibacterials, anti-infectives and anti-diarrheal drugs containing antibiotics for curative encounters.
- MOH budget on pharmaceuticals per capita is the amount of money spent on pharmaceuticals by all MOH sources for the most recent year, per individual in the population. MOH budget is the budget of Inpres for pharmaceutical purchases within 1997/1998 in East Java.
- Average percentage of time out of stock for a set of indicator drugs in 20 Puskesmas storage is the average of the percentage of the number of days that a product was not available in a Puskesmas over a recent twelve month period.

## RESULTS

The population per functional Puskesmas that dispenses drugs in East Java can be computed by dividing the total Eastern Java population per functional Puskesmas was 37,346.

The population per registered pharmacist or pharmacy technician can be computed by dividing the number of population, that was 34,507,700 by the combined number of pharmacists and pharmacy technicians, i.e  $264 + 789 = 1,053$ . In 1997 the ratio in East Java was 32,771.

The population per authorized prescribers in the public sector in East Java during the year of 1996 can be computed by dividing the number of Eastern Java population,

that was 34,205,600 in 1996 by the combined number of authorized prescribers, i.e.  $2,970 + 8,030 + 6,795 = 18.780$ . In 1996 this indicator was 1,821.

The average number of drugs prescribed per curative outpatient encounter in a Puskesmas can be computed by dividing the total number of drugs prescribed in all encounters by the total number of curative encounters studied in all Puskesmas. In East Java ini 1997/1998 the average number of drugs prescribed per curative outpatients encounter was 3.3 drugs per encounter (Table 1).

The percentage of outpatients prescribed injections at one Puskesmas can be obtained by dividing the total number of patients prescribed injections by the total number of patient encounters surveyed and multiplying by 100. In 1997/1998 in East Java the overall indicators, i.e. the averages of these percentages, was 23%.

The percentage of outpatients prescribed antibiotics at Puskesmas can be computed by dividing the total number of patients prescribed antibiotics by the total number of patients encounters surveyed and multiplying by 100. In East Java in 1997/1998 the overall indicators, i.e. the averages of these percentage, was 41%.

The MOH drug budget (Inpres) on pharmaceuticals in East Java in 1997/1998 was Rp. 25,111,066,000,-, while the number of population at the same year was 34,507,700, giving a ratio of Rp. 727.69,- per capita that was equal to 32 cents US\$ in 1997 or nearly equal to ten cents US\$ in 1999.

The average percentage of time out of stock for a set of indicator drugs in a Puskesmas storage can be computed by dividing the number of stockout days for all indicator drugs by 365 times the total number of indicator drugs normally stocked, i.e. 15 items, and multiplying it with 100% (see Table 1).

Table 1. Some indicators for assessing Pharmaceutical Management in 20 Puskesmas in East Java in 1997/1998

No.	Time out of stock		Number of drugs presc.		patients prescr. inj.		patients presch. Ab	
	Total (days)	%	Total	Average	Total	%	Total	%
1	690	12.6	104	3.5	15	50	17	57
2	390	7.1	103	3.4	15	50	14	47
3	480	8.8	93	3.1	4	13	12	40
4	480	8.8	104	3.5	20	67	11	37
5	390	7.1	90	3.0	17	57	10	33
6	360	6.6	102	3.4	13	43	14	47
7	570	10.4	81	2.7	0	0	9	30
8	750	13.7	76	2.5	0	0	10	33
9	120	2.2	104	3.5	11	37	9	30
10	390	2.2	110	3.7	8	27	18	60
11	390	7.1	103	3.4	4	13	15	50
12	360	6.6	75	2.5	1	3	10	33
13	360	6.6	129	4.3	0	0	21	70
14	480	8.8	98	3.3	5	17	14	47
15	360	6.6	107	3.6	0	0	10	33
16	360	6.6	101	3.4	0	0	17	57
17	390	7.1	97	3.2	2	7	17	57
18	780	14.5	93	3.1	0	0	12	40
19	210	3.8	123	4.1	20	67	22	73
20	0	0	88	2.9	0	0	4	13
Avr	415.5	7.6	99.2	3.3	6.8	23	12.2	41



In 1997/1998 the average percentage of time out of stock in East Java =

$$\frac{415.5}{365 \times 15} \times 100\% = 7.60\%$$

## DISCUSSION

In 1997 an average of 37.346 population per Puskesmas in East Java was greater than the results of PAHO surveillance in some developing countries. This indicator may provide a rough measure of access to and availability of pharmaceutical services and the information will allow health planners and evaluators to assess and monitor strategies in order to improve distribution and access to pharmaceuticals.

MOH facilities in East Java in 1997 had a ratio of 32.771 population per registered pharmacist or pharmacy technician. This indicator may be an important constraint in some developing countries concerning the unavailability of technically skilled human resources and can provide a rough measure of access to them. Health care systems with a high ratio of this should include in their human resource management plan the recruitment, training and development of this important resource in order to bring about improvements in service delivery.

Adequate numbers of technically qualified staff who are authorized to prescribe medicines are essential to a sound health care system. In East Java in 1996 the ratio was 1,821 population per authorized prescriber in the MOH health system. This indicator provides a rough measure of access to health care providers in the public sector who are authorized to prescribe drugs.

From 20 Puskesmas in East Java in 1997/1998 it was found that an average of 3.3 drugs prescribed per curative outpatient encounter and that is greater than the results of PAHO surveillance in some developing countries, viz. 2.1 drugs prescribed per curative outpatient encounter in MOH health facilities (see table 1). This indicator actually may describe prescriber behaviour, since too

high or too low an average number prescribed can be indicate poor prescribing practices. The reason for this phenomenon may vary from the lack of pharmaceutical information and education to chronic lack of supplies that force health workers to prescribe what is available and need a more profound study to determine the dominant cause.

Table 1 also shows that the percentage of outpatients prescribed injections and antibiotics at Puskesmas are respectively 23 % and 41 %. These values are smaller than the results of PAHO surveillance, i.e. 25% for injections and 43 % for antibiotics. These percentages may reflect how properly these drugs are used can influence cost reduction and effectiveness as well as safety of the drugs.

The results show that the MOH drug budget on pharmaceuticals per capita in 1997/1998 for East Java was Rp. 727.69,- or nearly equal to 32 cents US\$ in 1997 which is still smaller than the result of PAHO surveillance in 9 developing countries in 1994, i.e. approximately 2.10 US\$. Assuming that there is no increase in the MOH budget on pharmaceuticals in 199 (Inpres), drug budget per capita is equal to ten cents US\$. This value is a measure of the adequacy of financing for pharmaceuticals in the public sector and government financing in Indonesia has decreased in recent years due to inflation and an increase in population.

The percentage of time out of stock for a set of indicator drugs represents a measure of a procurement and distribution system capacity to maintain a constant supply of drugs. Table 1 shows that in 1997/1998 the average percentage of time out of stock in Puskesmas in East Java was 7,60% which is just a smaller than the results of PHO surveillance in some developing countries (12%).

## CONCLUSSIONS

The eight indicator for assessing pharmaceutical management determines at 20 Puskesmas in East Java in 1997 are as follows :

In 1997 the number of population per Puskesmas in East Java was 37,346.

The population per registered pharmacist or pharmacy technician in 1997 in East Java was 32,771. In 1996 the number of population per authorized prescriber in the public sector in East Java was 1,821. In East Java in 1997/1998 the average number of drugs prescribed per curative outpatient encounter was 3.3 drugs per encounter. In 1997/1998 from 20 Puskesmas in East Java the percentage of outpatients prescribed injections was 23%.

In 1997/1998 from 20 Puskesmas in East Java the percentage of outpatients prescribed antibiotics was 41%. The ratio of MOH drug budget (Inpres) per capita in East Java in 1997 was Rp. 727.69,- or nearly equal to ten cents US\$ in 1999. In 1997/1998 the average percentage of time out of stock for a set of 15 indicator drugs in Puskesmas storage in East Java was 7,60%.

## REFERENCES

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