DRUG USE PATTERN IN

UPAZILLA HEALTH COMPLEXES

OF

BANGLADESH

REPORT ON

SAVAR THANA HEALTH COMPLEXES

PHARMACEUTICAL RESEARCH

on

DRUG USE PATTERN IN UPAZILLA HEALTH COMPLEXES

OF BANGLADESH

Submitted by: NUR-E-TASMIN
                     ID# 2005-2-70-051
                     Department Of Pharmacy
                     East West University

Submitted to: Professor DR. Muniruddin Ahmed

                     Pro Vice Chancellor

                     East West University

Certify to

                DR.Chowdhury Faiz Hossain

                Chairperson & professor

                department of pharmacy

ABSTRACT

Medically inappropriate, ineffective, and economically inefficient use of pharmaceuticals is commonly observed in the health care system throughout the world especially in the developing countries like Bangladesh. However, various forms of inappropriate prescribing often remain unnoticed by those who are involved in health sector decision making or delivery of health services. This problem will usually come to the attention of health decision makers or managers when there is an acute shortage of pharmaceutical budget and action for cost efficiency is required.

The need for promoting appropriate use of drugs in the health care system is not only because of the financial reasons with which policy makers and managers are usually most concerned. Appropriate use of drugs is also one essential element in achieving quality of health and medical care for patients and the community. Obviously, this should also become the concern of practitioners. Actions or intervention programs to promote the appropriate use of drugs should, therefore, be continuously implemented and systematically incorporated as an integral part of the health care system.

This session serves as an introduction to the entire issue of Promoting Rational Use of Drugs in the developing countries. The definition of rational use will be discussed, and a description of irrational drug use

will build on that definition, with common examples highlighted. The impacts as well as the underlying factors of irrational use of drugs will be addressed.

A series of examples will be presented, ranging from general drug use patterns to disease specific examples for ARI,diarrhea, and other common illnesses

The study focused on determination of prescribing and health care practices of doctors and pharmacist in the Thana health complexes in Bangladesh. Drug use indicators developed by international network for rational use of drug (INRUD) were used in the study. The study used the indicators like prescribing, patient cares, and drug systems and captured the key information on prescribing pattern, patients care and health facility management. This was done through collecting prospective data.

To determine the pattern of drug prescription by consulting in Thana Health Complex of Bangladesh, 30 prescriptions were collected from Savar Thana Health complex. In total, 57 drugs were prescribed. The average number of drugs per encounter was 2.1%. This survey revealed that 54% drugs were prescribed by generic names and 65% drugs were prescribed from essential drug list. Poly-pharmacy was observed in 80% of all encounters. Information about the prescribing physician and the

patient was invariably deficient. Name of patient, age and gender were totally absent in all prescriptions.

In addition, none of the prescriptions mentioned address, diagnosis, or allergy of the patient. The most commonly prescribed therapeutic classes of drugs of total cases were as follows: 50% antibiotics, 12% antidiarrhoeal and 26% antiulcer. Other drugs included vitamin supplements 15%, ferrous sulphate 6.2% and Co-trimoxazole (40%) of total cases. Other agents prescribed in small proportions of encounters collectively amounted to 5%of total cases. No patients were given injection. The average consultation time was found to be 1.7 minutes and the dispensing time was only 23 seconds. The availability of key drugs was 58% and there was no essential drug list. The survey showed that 61.4% total prescribed drugs were actually dispensed and no dispensed drugs were adequately labeled. 86.67%patients had adequately knowledge on correct dose.

In many case the doctors were found to comply with the patients demand by prescribing unnecessary drugs. From the result of the
study it is understood that many drugs were prescribed irrationally or inappropriately in rural area and Thana health complexes in Bangladesh.

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INTRODUCTION

Rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, and the lowest cost to them and their community.

Access to health services, qualified staff and drugs are necessary components of any health care system. OF these three components drugs are of special importance to a health care system because of various reasons. They save life and improve health, promote trust and participate in health services and are very costly. In addition the quality and cost effective of health care provision is highly dependents on the appropriate use of drug.

In both the developed and the developing world, medically inappropriate, ineffective and economically inefficient use of pharmaceuticals commonly occurs in health care complexes like Thana health complexes in Bangladesh. The costs of such irrational drug use are enormous in terms of both scarce resources and the adverse clinical consequences of therapies that may have real risks but no objective benefits. This irrational use of drug must be minimized to an affordable limit to save limited resources and the consumers from unnecessary sufferings from adverse effect of pharmaceutical products. The purpose of this study is to

document disease management practice in the government health care centers in Bangladesh and to excess the reasons why prescribers are dispensers behave as they do, i.e. to evaluate the significance of the different pressure s and constraints put on them. Once the major constraints and pressures are assessed, it will be possible to identify the potential intervention strategies to improve prescribing and dispensing and promote rational use of drug. The need for promoting appropriate use of drugs in the health care system is not only because of the financial reasons with which policy makers and managers are usually most concerned. Appropriate use of drugs is also one essential element in achieving quality of health and medical care for patients and the community. Obviously, this should also become the concern of practitioners. Actions or intervention programs to promote the appropriate use of drugs should, therefore, be continuously implemented and systematically incorporated as an integral part of the health care system.

Bangladesh is the first country in the world to introduce the national drug policy in 1982The policy's first effects were to establish a list of 250 essential drugs and to remove about 1600 useless,ineffective,harmful products in the market. The policy has increased the production of essential drugs, controlled the drug prices within affordable limits.

Today, the quality of drug products and therefore also their effectiveness and safety is less and less certain, especially for the poorest populations who are attracted by lower priced drugs sold outside pharmacies. Recent years have seen an increase in the circulation of counterfeit and substandard drugs on the market. Counterfeit drugs are those that mimic authentic drugs; substandard drugs are those produced with little or no attention to good manufacturing practices.Because of a lack of regulation and enforcement, the quality, safety and efficacy of both imported and locally manufactured medicines in many developing countries cannot be guaranteed. Subsequently, smuggling and illegal importation of drugs are common. Substandard and counterfeit drugs are then not only sold in these countries but also exported or re-exported.

The purpose of this study is to document disease management practice in the government health care centres in Bangladesh and to asses the reasons why prescribers and dispensers behave as they do i.e.to evaluate the significance of the different pressure and constraints put on them.Once the major constraints and pressure are assesed,it will be possible to identify the potential intervention strategies to improve prescribing and dispensing practice and promote rational use of drugs.The results of the studies may be helpful for the incorporation and integration of such studies as a potential contributionto the delivery of Essential service package of Bangladesh government.

BACKGROUND:

In Bangladesh, inappropriate and irrational use of drugs is widespread. Identified problems like poly-pharmacy include indiscriminate use of antibiotics and antimicrobials, and non compliance with standard treatment guidelines. In many studies it was found that antibiotics are inappropriately used in rural areas of Bangladesh. This has adverse clinical consequences including morbidity and morality, side effects and the emergence of drug resistance. Irrational drug uses also results in wastage of scarce public resources and also increases the cost of treatment. To improve the quality of health care for the patient of a country like ours ,there is a crying need for rational use of drugs. In the proposed study, attentions will be focused to understand pattern of the prescribing and the health care practice of doctors and pharmacists in Thana health complexes by using the indicators developed from the experience of international network for rational use of drug(INRUD).Once the determinants are observed and identified, intervention strategies will be proposed and applied to improve the drug use in Thana health complexes in Bangladesh.

Factors Underlying Irrational Use of Drugs

There are many different factors which affect the irrational use of drugs. In addition, different cultures view drugs in different ways, and this can affect the way drugs are used.

The major forces can be categorized as those deriving from patients, prescribers, the workplace, the supply system including industry influences, regulation, drug information and misinformation, and combinations of these factors.

Patients - drug misinformation	misleading beliefs
	patient demands/expectations
Prescribers - lack of education and training	inappropriate role models
	lack of objective drug information
	generalization of limited experience
	misleading beliefs about drugs efficacy
Workplace - heavy patient load	- pressure to prescribe
	- lack of adequate lab capacity
	- insufficient staffing
Drug Supply System - unreliable suppliers	drug shortages
	expired drugs supplied
Drug Regulation - non-essential drugs available	non-formal prescribers
	lack of regulation enforcement
Industry - promotional activities	misleading claims

All of these factors are affected by changes in national and global practices. For example, In some countries, however, the use of injectibles

remains high due to false assumption of prescribers that injections will improve patient satisfaction and that they are always expected by the patients.

CONSEQUENCES OF IRRATIONAL DRUG USE:

Some of the identifiable public health consequences of irrational drug use include:

1) Increase morbidity and mortality due to avoidable treatment failure and reduction in the quality of drug therapy.

2) Increased risk of unwanted effects such as adverse drug reactions

3) The emergence of drug resistance

4) Waste of resources leading to increased cost and reduced availability of the other vital drugs.

5) Psychological impacts such as when patients come to believe that there is pill for every ill. This may cause an apparent increased demand of drug.

RESEARCH OBJECTIVE:

Inappropriate and irrational drug use is very common in Thana health complexes. Identified problems include indiscriminate use of antibiotics

and antimicrobials and non compliance with standard treatment guideline.

The objectives of research are:

1) **To** asses the drug use pattern of Thana health complexes in **Bang**ladesh.

2) **To** identify the role of economic incentives, professional controls **and** bureaucratic regulations in the prescribing pattern of the **heal**th care professional and providers.

3) **To** examine the impact of irrational prescribing on the drug cost for **trea**tment of five selected common diseases.

4) **To** examine the impact of irrational prescribing on the resource **use** at the health facilities.

5) **On** the basis of information and its analysis, the study will suggest **cor**rective measure for effective measure for effective **imple**mentation of rational drug use.

HYPOTHESIS:

Irrational prescribing and dispensing practice and inappropriate, ineffective and economically inefficient use of drug is wide spread in public **sect**or like Thana health complexes. The prescribers in most cases prescribe inappropriate and insufficient drugs due to inadequate supply of essential drugs. In many cases the doctors were found to comply with

the **patie**nts demand by prescribing unnecessary drugs. Some prescribers are often busy with private practice in Thana health complexes. After the investigation of drug use pattern in Thana health complexes ,different intervention strategies will significantly improve rational prescribing and drug use for the disease under consideration.

CONCEPTUAL MODEL:

Dispensing and prescribing pattern is very important for reducing the irrational use of drug. prescribing patterns includes a complex set of factors which involves the interaction of doctors, dispensers and patients influenced by the immediate and distal contexts in which the encounters takes place. In other words, prescribing and dispensing behavior are determined by the following factors:

1)Pressure from the private health sector: The private sector specially private pharmaceutical companies competing for drug supply and Sales of their drugs.

2)Constraints with public health system: The problem associated with procurement system and financing the drug supply and availability of essential drugs, the application of essential drug list, reliable method for quantification of drug needs.

3) **Problems in prescribing orientation, belief and attitude:** The problems associated with the knowledge and practice of prescribing by the health professionals and health workers, application and use of standard diagnostic and treatment guideline together with essential drug list.

Some examples of commonly encountered inappropriate prescribing practices in many health care settings include:

1) **Overuse** of antibiotics and antidiarrheals for non-specific childhood diarrhea

2) **Indiscriminate** use of injections, e.g., in malaria treatment,

3) **Multiple** drug prescriptions,

4) **Excessive** use of antibiotics for treating minor ARI.

5) **Minerals** and tonics for malnutrition.

STUDY DESIGN AND METHOD:

The **study** was divided into two main stage.

First **stage** is prescribing and dispensing patterns were determined in 5(five) randomly selected Thana health complexes in Dhaka division. These **were** done through prospective case review. Prospective data collection comprised doctor patient and dispenser patient interaction. Facility **managers** were interviewed to understand he drug procurement and management system.

In second stage depth interviews were held with administrators and doctors. Focus group discussions were held with a sample of patients.

THE SELECTED HEALTH COMPLEXES:

1) Savar Thana health complexes

2) Sreepur Thana health complexes

3) Sonargaon Thana health complex

4) Arai Hazar Thana health complex

5) Keranigonj THana health complex

CORE DRUG USE INDICATORS:

Field instruments were adapted from INRUD drug use indicator manual(1996).The following drug use indicators were applied to assess the drug use pattern in Thana health complexes for the disease under consideration. CORE DRUG USE INDICATORS:

Field instruments were adapted from INRUD drug use indicator manual(1996).The following drug use indicators were applied to assess the drug use pattern in Thana health complexes for the disease under consideration.

Three indicators are there

a) Prescribing indicators:

Average number of drugs per encounter

% of encounters with antibiotic prescribed

% of encounters with injection prescribed

%of drugs prescribed from essential drug list

b) Patient care indicators

Average consulting time

Average dispensing time

%of drugs actually dispensed

%of drugs adequately labeled

Number of drugs prescribed

Patient's knowledge of correct dose

c) Health facility indicators

Availability of copy of essential drug list

Availability of key drugs

Common diseases:

- Fever
- Diarrhea
- Malaria
- ARTI
- Scabies
- Skin disease
- Vitamin deficiency
- Fungal skin infection
- Conjunctivitis

- Anemia

- Worm infections

DATA COLLECTION PROCEDURE

In Savar Thana health complex observation was started at the middle time of the clinical day. It was based on understanding of the patient flow at health facilities. And clinical consultation and dispensing time was recorded. Five students of Pharmacy department were trained by the research instructor. It was necessary to get permission letter from the officer of Thana Health Complex. The data were collected about both the clinical examination and drug dispensing procedures. The procedure was recorded at the beginning and ending times for individual consultation. A similar procedure was used in the dispensing area where the beginning and ending times of the patient interactions with dispenser was recorded. It was evaluated, based on the patient's knowledge about when and in what quantity each drug should be taken. It was also monitored the number of drugs received by patient from the dispensing store of the Savar Health complex. The data for the health facility indicator were recorded on the facility summery form.

Source of Data in Summary

1) The data was collected from out patients by prospective case review.Allthe prescribers are medical doctors.

The detail prescribing indicator form required the following:

- Name, age and sex of the patient

- Health problems of the patient

- Name, strength and quantity of the prescribed drugs.

2) Prospective data on the patient care information were collected by observing the consultation sittings in the consultation room and examination of 30 cases were done.This Observations were made in without interrupting normal activities.

Data were consolidated using a summary form time of exchange between the patient and the doctor, this is called consultation time.

3) The information on prescribing and dispensing, patients knowledge about drug use availability of essential drugs were obtained from observation and interview.

PICTURE OF SAVAR THANA HEALTH COMPLEX:

Enumerators are inside the health complex
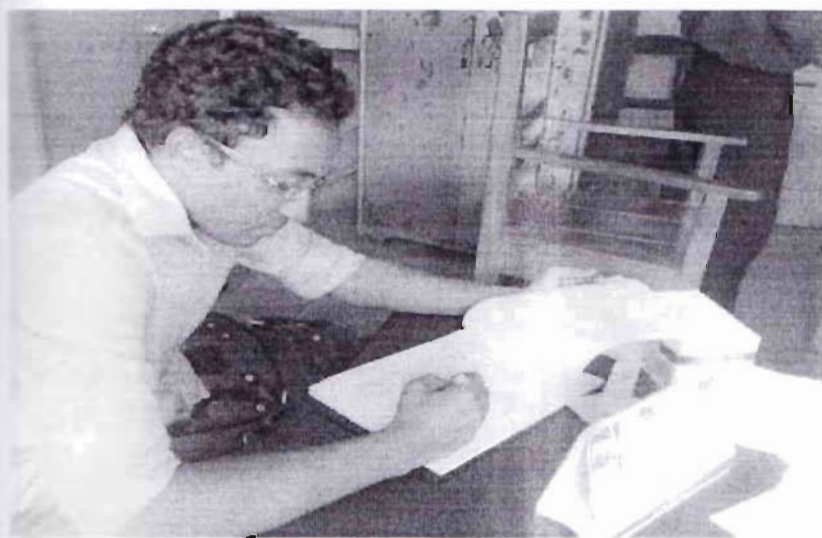
Enumerators waiting for patient care interview
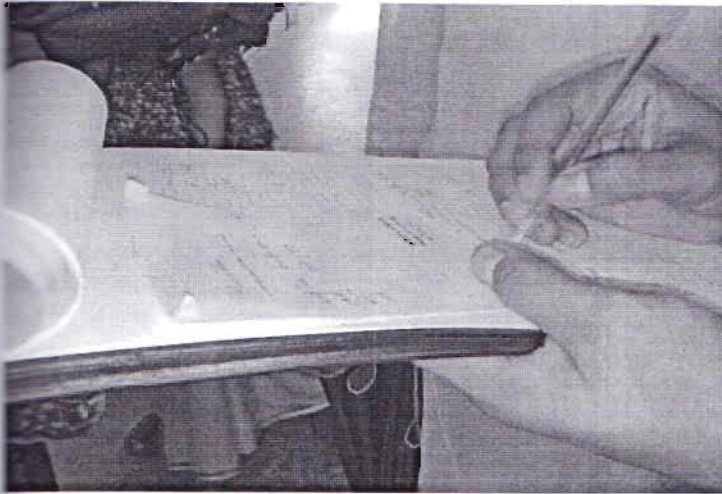
Enumerator with a stuff

Enumerators are with patient
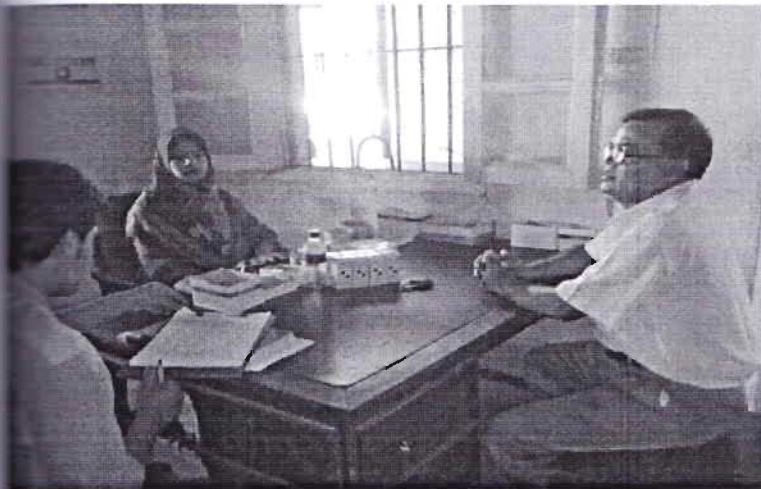
Enumerators are with doctor.final shanta

PRESCRIBING INDICATOR FORM

LOCATION: SAVAR THANA HEALTH COMPLEX

sequence	Age	Drugs	Generics	Antibiotics (0/1)	Injection(0/1)	On EDL
1	35	5	2	0	0	2
2	27	4	2	1	0	4
3	30	2	1	1	0	1
4	44	3	3	1	0	3
5	23	2	2	0	0	2
6	25	3	0	1	0	2
7	31	2	2	0	0	2
8	36	2	2	1	0	2
9	5	1	0	0	0	0
10	12	2	0	0	0	2
11	39	1	1	1	0	0
12	3	2	2	0	0	1
13	28	2	2	1	0	1
14	32	2	1	1	0	1
15	38	2	2	1	0	1
16	33	2	2	1	0	2
17	28	3	1	1	0	2
18	23	3	1	0	0	1
19	42	2	1	1	0	1
20	47	1	1	0	0	1
21	36	2	0	0	0	1
22	25	2	2	0	0	2
23	30	1	0	0	0	1
24	25	1	0	1	0	0
25	16	1	0	1	0	0
26	13	1	1	0	0	1
27	14	2	0	0	0	2
28	29	3	2	1	0	2
29	26	3	1	0	0	1
30	7	1	0	0	0	0
Total		63	34	15	0	41
Average. percentage		2..1	53.97% 54%	50%	0%	65%

PATIENT CARE FORM
LOCATION: SAVAR THANA HEALTH COMPLEX

Sequence	Consulting time (sec)	Dispensing time(sec)	Drugs prescribed	Drugs dispensed	Adequately labeled	knows dosages (0/1)
1	140	23	1	1	1	1
2	70	12	2	3	3	1
3	80	8	2	2	0	1
4	95	26	3	0	0	1
5	135	24	2	2	1	0
6	110	13	2	2	2	0
7	73	57	2	1	0	1
8	207	43	2	1	0	1
9	120	35	1	3	2	1
10	103	18	2	1	1	1
11	116	16	2	2	2	1
12	260	22	2	1	1	1
13	96	15	4	2	0	1
14	60	15	2	2	2	1
15	215	23	2	0	0	0
16	52	44	3	2	1	1
17	60	24	2	2	1	1
18	62	12	3	1	0	1
19	108	16	1	1	0	1
20	62	34	3	1	0	1
21	100	12	1	0	0	1
22	100	25	2	0	0	1
23	156	19	2	0	0	1
24	60	16	1	0	0	1
25	90	17	2	1	0	1
26	70	20	4	1	1	1
27	72	40	2	0	0	1
28	60	31	2	2	1	1
29	70	16	2	1	1	1
30	85	28	1	0	0	0
Total	3087	689	57	35	20	26
Average	102.9	22.97				
Percentage				61.40% dispensed	35.09% labelled	86.67% cases asked

_KEY DRUGS IN STOCK TO TREAT IMPORTANT CONDITION

Disease	drug	In stock(0/1)
Diarrhea	ORS	1
	Cotrimoxazole tablet	1
Fever	Paracetamol tablet	1
Arti	Penicillin tablet	1
Malaria	Chloroquine tablet	1
Scabies	Benzyl benzoate ointmer	0
Fungal skin infection	Whitefield ointment	0
Anemia	Ferrous salt + Folic acid tablet	1
Worm infection	Mebendazole tablet	0
Conjunctivitis	Chloramphenicol eye dro	1
NSAID	Aspirin	1
Other antibiotics	Ampicillin&Tetracyclin	1

RESULT AND DISCUSSION

Prescribing Indicator

The number of drugs per encounter indicates the pattern of polypharmacy.

Poly pharmacy means "many drugs" and refers to problems that can occur when a patient is taking more medications than are actually needed. It is a particular concern for older adults, who make up 13% of the population but account for almost 30% of all prescribed drugs. Typical older, adult patients takes one or more prescription drugs plus several OTC remedies, such as antacids, laxatives or pain-killers, often used without consulting with physician. Some people have no problems at all, but others suffer because of the combination of drugs they take. Indeed, research has found that higher rates of depression and lower quality of life were results of a person's perception that they were taking too many drugs

In Savar Thana health complex Study result sows that the average number of drug prescribed per case was 1.90.But the ideal figure should be one drug for one condition.The result is more or less satisfactory in comparission to the result of other countries. But we can reduce the irrational drug use and also we can improve the result by avoiding unnecessary drug from the prescription. as for example a 65 tears old patient do not need 2 medicines(allatrol and paracetamol) only for

normal cold. This is not a good practice.another 60 years old patient was given 5 drugs in case of chest pain. Those were omeprazole, clognil plus, Vitamin B complex, diclofenac, antacid plus. Here we can see that two anti ulcer drug is given which is of same action, and also Vitamin B complex paracetamol and diclofenac is given , which have the same activity. This indicates the irrational use of drugs.

 Vitamin B complex can be easily obtained from vegetable and fruit contents. Vitamin B complex could be avoided in this case. Excess uses of vitamins leads to hypervitaminogenesis.which have the symptom of vitamin deficiency. Vitamin and antioxidant increase the risk of death. In many prescriptions we have seen that the doctors prescribed vitamin in case of malnutrition, simple cold. By avoiding the use of unnecessary drug it is possible to maintain rational drug use.

Drugs often have several names. When a drug is first discovered, it is given a chemical name, which describes the atomic or molecular structure of the drug. The chemical name is thus usually too complex and cumbersome for general use. Next, a shorthand version of the chemical name or a code name (such as RU 486) is developed for easy reference among researchers. When a drug is approved by the Food and Drug Administration (FDA—the government agency responsible for ensuring that drugs marketed in the United States are safe and effective), it is given a generic (official) name and a trade (proprietary or brand)

name. The trade name is developed by the company requesting approval for the drug and identifies it as the exclusive property of that company. For example, phenytoin Trade Names DILANTIN is the generic name and Dilantin is a trade name for the same drug.

When a drug is in patent protection, the company markets it under its trade name. When the drug is off-patent the company may market its product under either the generic name or trade name. Other companies that file for approval to market the off-patent drug must use the same generic name but can create their own trade name. As a result, the same generic drug may be sold under either the generic name or one of many trade names. There are many reason that doctors use brand name over the generic one:

Generic names are usually more complicated and harder to remember than trade names. Many generic names are a shorthand version of the drug's chemical name, structure, or formula. In contrast, trade names are usually catchy, often related to the drug's intended use, and relatively easy to remember, so that doctors will prescribe the drug and consumers will look for it by name.

Trade names often suggest a characteristic of the drug. For example, Lopressor lowers blood pressure, Vivactil is an antidepressant that might make a person more vivacious, Glucotrol controls high blood sugar

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(glucose) levels, and Skelaxin relaxes skeletal muscles.so it is easy to remember.

• The term *generic,* when applied to such items as foods and household products, is used to describe a less expensive, sometimes less effective or lower-quality copycat version of a trade-name product.

• most generic drugs, although less expensive than the comparable trade-name drug, are as effective and of the same quality as the trade-name drug

Due to the promotional strategy of the pharmaceuticals company, they try to satisfy the doctors at any cost. So the doctors have the tendency to prescribe more drugs in brand name. Their prescribing behavior is irrational. We observed that Omeprazole tablet was given by the name of Losectil, which is it's brand name.also ranitidine was prescribed by it's brand name of Neotack.Metronidazole was prescribed by it's brand name of Flazil.

The patients had to buy that drugs which were given in brand name from the local drug Store. These are nothing but a marketing policy. Due to this policy the poor patients aredeprived of getting the drugs form Thana Health complex.

• In most of the country the percentage of drugs prescribed by generic names are encouraging, in that they show that is possible to rich high

levels of generic prescribing. Levels as high as 98% offer hope to countries with lower levels.

In this study the average 54% of the drugs were prescribed in generic name. It shows very low percentage but our expectation is that 100% drugs should be prescribed by the generic name in public health complexes.

Antibiotic is commonly used in Bangladesh due to high susceptibility of infectious disease. Incorrect, irregular use of antibiotics increases resistance . Our next concern was to study percentage of encounter with antibiotics. The result was 50% of total cases. In Bangladesh the use of incorrect antibiotics is creating a serious problem like antibiotic resistance. As a result many diseases are not properly cured, or the disease can not be treated by any drug. The high rate of antibiotic resistance in this country appears to be due to a combination of heavy burden of bacterial infectious disease, inappropriate use of the available drugs. For example only for normal fever it is not a good practice to give an antibiotic course. The study was undertaken in Savar Thana health complex to better understand the use of antibiotics with appropriate dosage for a given period of time in the community.

The use of injection is another important indicator of irrational use of drug. Injection is not convenient to the patient's but some people think that injection will work quickly & give better action in a short period of time. Doctors think that patients will satisfy to have an injection dose.

In our study in Savar Thana Health complex the percentage of injection was totally absent. This treatment is very appreciable and encouraging. This may be due to various reasons. One may be due to unavailability of injection in drug store of Thana Health Complex. And another may be due to the implementation of National Drug Policy in which production of injection has been limited to a great extend.

Essential medicines are those that satisfy the major health care needs of the population. They are selected with due regard to public health relevance, evidence on efficacy and safety, and comparative cost-effectiveness. Essential medicines are intended to be available within the context of functioning health systems at all times in adequate amounts, in the appropriate dosage forms, with assured quality and adequate information, and at a price the individual and the community can afford. The implementation of the concept of essential medicines is intended to be flexible and adaptable to many different situations; exactly which medicines are regarded as essential remains a national responsibility. Our next concern was on the percentage of drug use following essential drug list. We have a result of 71%. The result is satisfactory. The behavior of prescribing drugs from Essential Drug List is due to procurement and supply of most of the drugs for health complexes from Essential Drug Company Limited owned by the government.

Patient Care Indicator

The quality of care provided to patients was assessed by examining the consultation practices of doctors in Savar Thana Health Complex. It is the time that prescribers and dispensers spend with each patient sets important limits on the poteintial quality of diagnosis and treatment.The average consultation time per patient was 102.9 second, or 1.7 minutes. This result is not satisfactory. Because a patient have to know about all possible information about disease and medication. Also the doctor need more time to know about the patient condition, clinical condition and the appropriate diagnosis of that clinical condition. To know about the clinical condition the doctors have to question the patient. But in this short time session it can not be possible. This short time is not enough to provide adequate clinical interaction. Proper diagnosis can be done by knowing the prehistory of the patient's condition. But the doctors do not want to know the prehistory. They just consider the patient's present condition and prescribe drugs without any physical examination. This is the reason why the consulting time is so low. This condition can be life threading for some clinical condition as heart disease, during pregnancy. In the developing country this problem is more prominent.

The quality of patient care was assessed by examining the dispensing practices. The average time taken to dispense the drugs was 22 to 23 seconds for each patient. This really a short time for properly dispense a

drug. In this short time period the pharmacist can not give full information about the dosing of the drug .Another problem is pharmacists in dispensing unit are often illiterate. They have no ideas about the drugs and its uses. So the pharmacist should give the clear information about the drugs and its uses to the patients, which might be dangerous for patient's health. Also storage condition is a big factor. If a drug is not properly stored then it may loose it's efficacy and an ineffective drug may create poison in the body. Finally we can say that the drugs are poorly dispensed in the Thana Health Complex.

The percentage of drugs prescribe in the Savar Thana Health Complex was about on average 63 %, given to the patients. Medicines are often prescribed according to the supplies available at the health center on the day concerned and not necessarily according to what the patient needs .This result was not satisfactory. This is because the doctors write only the brand name not the generic name. So the patient can't get medicines from the Thana health complex store.

Labeling on the drug container was poorly present in Savar Thana Health Complex. It was 35.09%. Adequately labeling as drug packages containing at least patient name, drug name, dosing pattern and the time when the drug should be taken.

The patient knowing about the drug and dosing pattern was about 86.67%.it is a satisfactory result.without adequately knowing about the dosage form the patient can't make the best use of it. This may cause the misuse of drug.From the result we can see that patient are concern about the dosage form.

Facility indicator

There were 9 drugs in the stock. And the average was 75 %. This was not quite satisfactory. But unfortunately there was no essential drug list. The low or unavailability of essential drugs affects the prescribing patterns. Bangladesh has a limited economy, and because of this drug supply in this type of governmental health complexes. This is the reason why the poor peoples are not getting drugs from the health complex. Also they are not careful to take medicine after they get some benefit some days later of taking medicine. So it is a great problem. Changes in the management of drugs could reduce misuse and irrational use and wastage of drug. So we have to improve drug management, availability of drugs within the health system without increasing expenses.

Conclusion

Drug use is the end of the therapeutic consultation. Ensuring that the correct drug is given to the correct patient is a high priority for all health professionals. Means exist to measure drug use, to intervene to change

drug use, and to evaluate these interventions. Health planners and prescribers need to use these tools to improve the quality of care provided to their patients.

From the studies we identified some serious drug use problems in health complex. Irrational use of drug is harmful for the patients and for the nations.

From all our study it was analyzed that

- Drugs are prescribed unnecessarily and irratinoaly where no drug therapy is required.
- -A high proportion of primary care patients in the Thana health complexes are receiving antibiotics for acute respiratory tracinfection, scabies, diarrhea and dysentery.
- Very short consultation and dispensing times provide very inadequate clinical interaction and little patient care.
- Labelling and dispensing drug is virtually absent in most of the health complexes.
- Inadequate drug supply seriously hampers prescribing and patient care.
- Cost of unnecessary and irrational prescribing is enormous in erms of money.

Limitation:

Data collection from Thana Health Complex was found to be a difficult task to perform. The principle limitation of this study was that there was no information regarding the patient's diagnosis in the prescription

Another limitation was the doctors tried to change their previous prescribing behavior, because they were careful in their prescribing after they knew about us.

Recommendations:

clear instructions on drug counter labels, diagnostic and treatment guidelines

The following recommendations are made towards the improvement of the utilization and rational prescribing of drugs at this secondary healthcare level.

1)Standard treatment protocol for common disease such as -typhoid fever, diarrhea, dysentery, gastric ulcers and respiratory tract infections should be developed.

2)Refresher training course should be provided in the most common illness and therapy.

3)Short course in rational prescribing, in particular for the use of antibiotics, NSAID and antidiarrhoeal should be organized for the prescribers.

4)In particular, studies need to be conducted to investigate the drug use pattern in the medical colleges and teaching hospitals, where medical students first learn and practice prescribing.

5)Irrational prescribing is a habit that is difficult to cure. However, prevention is possible. There is some evidence that interventions such as short problem-based training course in pharmacotherapy and rational use focused workshops can improve prescription behavior.

6)Regulatory methods are related to government policy or laws. These include banning unnecessary and harmful drugs, limiting the number of drugs available to lower level of health facilities, and limiting the number of drugs.

7)Managerial methods are related to health system administration. These include altering prescribing and dispensing patterns by encouraging the standard prescription forms, limiting drug availability, restricting the prescribing of certain drugs to doctors with special training, printing Finally public health care campaigns should be introduced to address the use and misuse of drugs.

---------------------------**OOOOOOO**--------------------------------

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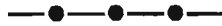
ANNEX

Upazilla Health Complexes of Dhaka Division

Districts	Postal Code	Thanas	Serial No.
Sariatpur	220	Goshairpur	1
	221	Damuddya	2
	222	Palong	3
	223	Bhederganj	4
	224	Naria	5
	225	Zazira	6
Madaripur	226	Sibehar	7
	227	Rajoir	8
	228	Madaripur	9
	229	Kalkini	10
Gopalganj	230	Kotoalipara	11
	231	Tongipara	12
	232	Gopalganj	13
	233	Kassiani	14
	234	Muksudpur	15
Faridpur	235	Bhanga	16
	236	Shadapur	17
	237	Charbhadrason	18
	238	Faridpur	19
	239	Nagarkandha	20
	240	Alfadanga	21
	241	Boalmari	22
	242	Modhukhali	23
Rajbari	243	Baliakandi	24
	244	Pangsha	25
	245	Rajbari	26
	246	Goalandaghat	27
Manikganj	247	Harirampur	28
	248	Shibalaya	29
	249	Dawlatpur	30
	250	Ghior	31
	251	Manikganj	32
	252	Singair	33
	253	Saturia	34
Dhaka	254	Dhamrail	35
	255	Savar	36
	256	Keraniganj	37
	257	Nawabganj	38
	258	Dohar	39
Munshiganj	259	Sreenagar	40
	260	Louhajang	41
	261	Serajdikhan	42
	262	Tongibari	43
	263	Munshiganj	44
	264	Gazaria	45
Narayanganj	265	Narayanganj	46

	266	Bandar	47
	267	Sonargaon	48
	268	Araihazar	49
	269	Rupganj	50
Narsingdi		Palash	51
	270	Narsingdi	52
	271	Raipur	53
	272	Belaboo	54
	273	Shibpur	55
	274	Manohardi	56
	275	Kapasia	57
Gazipur	276	Kaliganj	58
	277	Gazipur	59
	278	Sripur	60
	279	kaliakair	61
	280	Mirzapur	62
Tangail	281	Nagarpur	63
	282	Debduar	64
	283	Tangail	65
	284	Basail	66
	285	Sakhipur	67
	286	Kalihati	68
	287	Bhuapur	69
	288	Ghatail	70
	289	Gopalpur	71
	290	Modhupur	72
	291	Sarisabari	73
Jamalpur	292	Jamalpur	74
	293	Madarganj	75
	294	Malandaha	76
	295	Islampur	77
	296	Dewanganj	78
	297	Bakshiganj	79
	298	Sribordi	80
Sherpur	299	Jhenaigati	81
	300	Sherpur	82
	301	Nakhla	83
	302	Nalitabari	84
	303	Haluaghat	85
Mymansing	304	Dhubeura	86
	305	Phulpur	87
	306	gouripur	88
	307	Iswarganj	89
	308	Mymansing	90
	309	Muktagacha	91
	310	Phulbaria	92
	311	Bhaluka	93
	312	Gafargaon	94
	313	Trisal	95
	314	Nandail	96
	315	Hossenpur	97
Kishorganj	316	Kishorgonj	98
	317	Pakundia	99

	318	Kotiadi	100
	319	Kuliarchar	101
	320	Bkairab	102
	321	Bjitpur	103
	312	Astagram	104
	313	Nikhli	105
	324	Mitamain	106
	325	Karimganj	107
	326	Tarail	108
	327	Itna	109
	328	Khaliajhuir	110
Netrokona	329	Modon	111
	330	Kendua	112
	331	Atpara	113
	332	Mohonganj	114
	333	Barhatta	115
	334	Nentrokona	116
	335	Purbodhala	117
	336	Durgapur	118
	337	Kalmakanda	119

PRESCRIBING INDICATOR FORM

Location: _____   Investigator: _____

Type: _____   Date: _____

Seq. #	Age (yrs)	# Drugs	# Generics	Antib. (0/1)*	Injec. (0/1)*	# on EDL	Diagnosis (Optional)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
Total							
Average							
Percentage							

* 0 = No   1 = Yes

PATIENT CARE FORM

Location: _____

Investigator: _____ Date: _____

Seq. #	Patient Identifier (if needed)	Consulting Time (min)	Dispen-sing Time (sec)	# Drug Prescr-ibed	# Drug Disp-ensed	# Ade-quately Labelled	Knows Dosage (0/1)*
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
Count							
Total							
Average							
Percentage							

* 0 = No   1 = Yes

FACILITY SUMMARY FORM

Location: _____ _____

Investigator: _____ _____ Date: _____

Essential Drug List/ Formulary available at facility? (0/1)*	
Key Drugs in Stock to Treat Important Conditions	**In** **Stock** **(0/1)***
ORS	
Vitamin A	
Cotrimoxazole tab.	
Paracetamol tab.	
Paracetamol pediatric syrup	
Benzylbenzoate ointment	
Whitfield ointment	
Penicillin tab.	
Gentian violet powder/ iodine	
Mebendazole	
Ferrous sulphate + Folic acid tab.	
Chloamphenicol eye drop	
Ampicillin tab.	
% in stock this facility	

Problems or Comments:

* 0 = No   1 = Yes

DETAILED PRESCRIBING ENCOUNTER FORM

Location: _____

Investigator: _____   Date: _____

ID#	Date	Name	Age	Sex	Prescriber
Health Problems	Health Problem Description		Code		
	1.				
	2.				
	3.				
Drugs	Name and Strength		Code		Quantity
	1.				
	2.				
	3.				
	4.				
	5.				
	6.				
	7.				
	8.				
	9.				

ID#	Date	Name	Age	Sex	Prescriber
Health Problems	Health Problem Description		Code		
	1.				
	2.				
	3.				
Drugs	Name and Strength		Code		Quantity
	1.				
	2.				
	3.				
	4.				
	5.				
	6.				
	7.				
	8.				
	9.				

Patient Exit Intercept Interview

1)   What is the main complaint/ ailment for which you have come here to seek treatment?

_____

2)   Is this your first visit to facility for this ailment?

3)   How long ago was your first visit?

4)   Did you consult any practitioner for this episode of illness before coming here?

5)   Whom did you consult? (<u>Probe</u> to specify type of practitioner)

_____

6)   Has the doctor of this facility told you about the name of the disease? (Skip to Q. 9)

        (1) Yes □   (2) No □

7)   What is the diagnosis? (Skip to Q. 9)

8)   Did you ask the doctor the name of your disease?

9)   Did the doctor physically examine your child?

        (1) Yes □   (2) No □

10)   Did you have the chance to fully tell the doctor about your illness?

11)   Did the doctor advise any laboratory test?

12)   How many drugs did you receive from this facility?

13)   Did the doctor here give you a prescription for a drug that you must buy of this facility?

14)   Did your doctor ask you to visit his private chamber for further treatment?

        (1) Yes □   (2) No □

15)   Did the pharmacist explain to you how to take the drug?

(1) Yes □   (2) No □

LIST OF 150 ESSENTIAL DRUGS

A. List of 12 essential drugs for use by the village level health workers:

    1.   Aspirin Tablet.
    2.   Chloroquine Phosphate Tablet/Syrup.
    3.   Aluminium Hydroxide Gel Tablet/Suspension.
    4.   Piperazine Tablet/Elixir.
    5.   Glucose Electrolyte Powder (ORS).
    6.   Phenoxymethyl Penicillin (Penicillin V) Tablet/Syrup.
    7.   Ampicillin Capsule/Syrup/Injection.
    8.   Ergometrine/Methylergometrine Maleate Tablet/Injection.
    9.   Ferrous Sulphate Tablet/Syrup.
    10.   Ephedrine.
    11.   Vitamin A 200,000 Units Capsule/100,000 Units Injection.
    12.   Chloramphenicol Eye/Ear/Ointment/Drop.

B. List of additional 33 essential Health Care for Primary Health Care up to the Upazilla Health Complex level:

    13.   Paracetamol Tablet/Elixir.
    14.   Pethidine Hydrochloride Injection.
    15.   Sulphadoxin with Pyrimethamine.
    16.   Levamisole Tablet/Elixir.
    17.   Chloramphenicol Tablet/Elixir/Injection.
    18.   Lidocaine 1%
    19.   Isoniazid with Thiacetazone Tablet.
    20.   Streptomycin Sulphate Injection.
    21.   Metronidazole Tablet/Elixir/Injection.
    22.   Atropine Sulphate Injection.
    23.   Hyoscine-N-Butyl Bromide Tablet/Injection.
    24.   Chlorohexidine/ Chloroxylenol Solution/Cream.
    25.   Procaine penicillin Injection.
    26.   Tetracycline / Oxytetracycline Capsule/Injection/ointment.
    27.   Phenobarbitone Tablet/Injection.
    28.   Diazepam Tablet/Injection.
    29.   Chlorpromazine Tablet/Injection/Syrup.
    30.   Dextrose in water (5%, 25%, 50%).
    31.   Redistilled water (Pyrogen free) amps.
    32.   Cholera Fluid.
    33.   Oxytocin.
    34.   Furosemide Tablet/Injection.
    35.   Prednisolone Tablet.
    36.   Propranolol Tablet/Injection.
    37.   Aminophylline Tablet/Injection.
    38.   Co-trimoxazole tablet/Suspension.

39.	Homatropne.
40.	DT/SPT/POLIO/Tetanol.
41.	Diphtheria Anti-Toxin.
42.	Tablet Vitamin B-Complex/Multi Vitamin drops 15ml.
43.	Ung. Salicylic Acid and Benzoic Acid.
44.	Benzyl Benzoate Saponated.
45.	I.V. Saline of various strengths (0.9%, 0.25%, 0.18%) with 4% Dextrose/ 0.9% Saline without Dextrose.

C. List of additional 105 Essential Drugs for use up to Tertiary level:

46.	Indomethacin Capsule/suppository.
47.	Morphine Sulphate Injection.
48.	Allopurinol.
49.	Quinine Tablet/Injection/Powder.
50.	Corticosteriod Eye Drop/Ointment.
51.	Diethyl Carbamazine Tablet/Suspension.
52.	Chloramphenicol Skin Ointment.
53.	Mebendazole tablet.
54.	Promethazine Tablet/Injection/Syrup.
55.	Ether Anesthetic.
56.	Procaine Hydrochloride.
57.	Susamethonium.
58.	Thiopental Sodium.
59.	Gallaminetriethiedide.
60.	Tubocurarine
61.	Halothane.
62.	Isoniazid Tablet.
63.	Ethambutol Tablet.
64.	Rifampicin.
65.	Dapsone tablet.
66.	Glibenclamide.
67.	Insulin Preparation.
68.	Pilocarpine Drop 1%, 2%, 4%.
69.	Emethine Hydrochloride Injection.
70.	Naloxone Hydrochloride.
71.	Sodium Thiosulphate Injection.
72.	Trifluperazine.
73.	Pralidoxime Tablet/Injection.
74.	Sodium antimony Gluconate Injection.
75.	Tincture Iodine.
76.	Lysol/Cresol/Soap Solution (Surgical).
77.	Benzyl Penicillin Injection.
78.	Benzathine Penicillin Injection.
79.	Erythromycin Suspension/ Tablet.
80.	Gentamycin Injection/Drops/Ointment.
81.	Cloxacillin Syrup/Capsule/Injection.

82.   Ethosuximide Capsule.
83.   Phenytoin Tablet/Capsule/Elixir.
84.   Amitriptyline/Nortriptyline Tablet.
85.   Haloperidol Tablet/Capsule.
86.   Prochlorperazine Tablet/Injection.
87.   Potassium Chloride Tablet/Injection/Syrup.
88.   Mannitol Solution.
89.   Dialysis Fluid.
90.   Plasma Substitute.
91.   Sodium-Bi-Carbonate Infusion 7.5% or 8.4%.
92.   Bendrofluazide.
93.   Acetazolamide.
94.   Spironolactone.
95.   Barium Sulphate (X-ray grade)
96.   Iodipamide 30%, 50%.
97.   Iopanic acid/ Iobenzamic acid tablet.
98.   Acetrizoic Acid/Iodized Oil Injection.
99.   Sodium diatrozoate.
100.   Iron-Dextran Complex Injection.
101.   Folic Acid Tablet.
102.   Hydrocortisone Injection/Ointment/Cream.
103.   Dexamethasone Tablet/Injection.
104.   Stibaestrol/Diethylstiboestrol.
105.   Levo-thytroxine.
106.   Progesterone Preparatious.
107.   Neomarcazole.
108.   Digoxin Tablet/Injection.
109.   Diazoxide Injection.
110.   Methyl-Dopa Tablet.
111.   Glyceryl Trinitrate Sublingual Tablet/Ointment.
112.   Procainamide Injection/Capsule.
113.   Heparin Injection.
114.   Warfarin-Sodium.
115.   Tetracaine/Novosine.
116.   Metaraminol Injection.
117.   Senna Tablet.
118.   Glycerin Suppository.
119.   Sulphadimidin Tablet.
120.   Ibuprofen.
121.   Sulphanilamide Powder.
122.   Sulphadiazine Injection.
123.   Adrenaline/Epinephrine Injection.
124.   Neo-stigmine Tablet/Injection.
125.   Sulbutamol Tablet/Injection/Elixir/Inhalar.
126.   ACD Blood Pack/Double Bag/Triple Bag.
127.   TABC.
128.   Anti-Rabies Vaccine.

129.	Polyvalent Anti-Venom.
130.	Tetanus Anti-toxin (minimum 100,000 Unit Dose)
131.	Diphtheria Anti-Toxin.
132.	Vitamin B_1 Injection/Tablet.
133.	Vitamin C Tablet.
134.	Vitamin B_{12} Injection.
135.	Vitamin K Tablet/Injection/Vitamin K_1 Injection.
136.	Cyclophosphamide Tablet/Injection.
137.	5 Fluro-uracil Injection/Capsule/Ointment.
138.	Methotrexate Tablet/Injection.
139.	Busulphan Tablet.
140.	Vincristine Injection.
141.	Nitrogen Mustard Injection.
142.	Dosurubicin.
143.	Chlorambucil.
144.	Fluorescien Eye Drop 1%.
145.	Clofazimine Tablet.
146.	Calciferol.
147.	Griseofulvin.
148.	Pyrazinamide.
149.	Plaster of Paris.
150.	Zinc Oxide Adhesive Bandage.

Data on International Indicator Studies (1990- 1993)

1. **Average Number of Drugs per Encounter**

   High: 5.2 (Nigeria, 4.3 (Ghana)
   Low: 1.3 (Zimbabwe), 1.3 (Ecuador)

2. **% Prescribed as Generics**

   High: 97 (Zimbabwe)
   Low: 37 (Ecuador)

3. **% Received Antibiotics**

   High: 63 (Sudan)
   Low: 12 (Guatemala)

4. **% Receiving injection**

   High: 56 (Ghana)
   Low: 0 (Bangladesh)

5. **Average Consultation Time (Min)**

   High: 6.3 (Nigeria)
   Low: 2.3 (Malawi)

6. **Average Dispensing Time (Sec)**

   High: 198 (Uganda)
   Low: 13 (Nigeria)

7. **% Patient Knowing Dose**

   High: 82 (Indonesia)
   Low: 27 (Malawi)

8. **% Drug Dispensed**

   High: 99 (Swaziland)
   Low: 70 (Nigeria)

9. **% Adequately Labeled**

   High: 86 (Mozambique)
   Low: 0 (Nigeria)

10. **Key Drugs In Stock**

    High: 100 (Jamaica)
    Low: 38 (Ecuador)

Annex   Results of Studies Using WHO Drug Use Indicators
Methodology, 1990- 1993

NOTE References can be found on the next page

Continent	No.	Country	Date	# Facilities	# Drugs	% Antibiotic	% Injections	% Generics	% on EDL	Consult Time (m)	Dispense Time (sec)	% Know Dosing	% Drug Dispensed	% Adeq Labeled	% Drugs in Stock	
Africa	2	Uganda	1990	42	1.9	56%	48%									
	3	Sudan	1991	37	1.4	63%	36%	63%								
	4	Malawi	1991	72	1.8	34%	19%			2.3		27%			67%	
	7	Zimbabwe	1991	56	1.3	29%	11%	94%								
	8	Tanzania	1992	20	2.2	39%	29%	82%		3.0	78	75%			72%	
	9	Nigeria	1992	20	3.8	48%	37%	58%		6.3	13	81%	70%		62%	
	17	Cameroon	1992	20	3.0	51%	41%	58%								
	12	Ghana	1993	20	4.3	47%	56%	59%								
	18	Uganda	1993	127	2.4	53%	36%	86%		4.6	198	29%	91%	37%		
	19	Mozambique	1993	26	2.2	43%	18%	99%		3.7	37	82%	85%	86%	87%	
	20	Swaziland	1994	20	3.0	54%	38%	63%		6.1	18	87%	99%	56%	92%	
	21	Nigeria	1994	11	5.2	58%	63%	62%		5.0	18	89%	94%	0%		
Asia	1	Yemen	1989	19	1.5	46%	25%									
	5	Indonesia	1991	20	3.3	43%	17%	59%		3.0		82%				
	6	Bangladesh	1991	20	1.4	31%	0%					63%				
	10	Nepal	1992	20	2.1	43%	5%	44%		3.5	86	56%	83%		90%	40%
America	11	Ecuador	1992	19	1.3	27%	17%	37%							38%	
	14	Guatemala	1992	20	1.4	27%	13%	72%								
	13	El Salvador	1993	20	2.2	32%	7%	72%								
	15	Jamaica	1993	20	2.4	30%	4%	40%								
	16	East Carib	1993	20	1.9	39%	1%	49%			184					
		AVERAGE		31	2.4	43%	25%	65%		4.2	79	67%	87%		73%	40%
		MAXIMUM		127	5.2	63%	63%	99%		6.3	198	89%	99%		92%	40%
		MINIMUM		11	1.3	27%	0%	37%		2.3	13	27%	70%		38%	40%

Continent	No.	Country	Date	PRESCRIBING INDICATORS						PATIENT CARE					FACILITY	
				# Facilities	# Drugs	% Antibiotic	% Injections	% Generics	% on EDL	Consult Time (m)	Dispense Time (sec)	% Know Dosing	% Drug Dispensed	% Adeq Labeled	% Drugs in Stock	
Africa	2	Uganda	1990	42	1.9	56%	48%									
	3	Sudan	1991	37	1.4	63%	36%	63%								
	4	Malawi	1991	72	1.8	34%	19%			2.3		27%			67%	
	7	Zimbabwe	1991	56	1.3	29%	11%	94%								
	8	Tanzania	1992	20	2.2	39%	29%	82%		3.0	78	75%			72%	
	9	Nigeria	1992	20	3.8	48%	37%	58%		6.3	13	81%	70%		62%	
	17	Cameroon	1992	20	3.0	51%	41%	58%								
	12	Ghana	1993	20	4.3	47%	56%	59%								
	18	Uganda	1993	127	2.4	53%	36%	86%		4.6	198	29%	91%	37%		
	19	Mozambique	1993	26	2.2	43%	18%	99%		3.7	37	82%	85%	86%	87%	
	20	Swaziland	1994	20	3.0	54%	38%	63%		6.1	18	87%	99%	56%	92%	
	21	Nigeria	1994	11	5.2	58%	63%	62%		5.0	18	89%	94%	0%		
Asia	1	Yemen	1989	19	1.5	46%	25%									
	5	Indonesia	1991	20	3.3	43%	17%	59%		3.0		82%				
	6	Bangladesh	1991	20	1.4	31%	0%					63%				
	10	Nepal	1992	20	2.1	43%	5%	44%		3.5	86	56%	83%		90%	40%
America	11	Ecuador	1992	19	1.3	27%	17%	37%							38%	
	14	Guatemala	1992	20	1.4	27%	13%	72%								
	13	El Salvador	1993	20	2.2	32%	7%	72%								
	15	Jamaica	1993	20	2.4	30%	4%	40%								
	16	East Carib	1993	20	1.9	39%	1%	49%			184					
		AVERAGE		31	2.4	43%	25%	65%		4.2	79	67%	87%		73%	40%
		MAXIMUM		127	5.2	63%	63%	99%		6.3	198	89%	99%		92%	40%
		MINIMUM		11	1.3	27%	0%	37%		2.3	13	27%	70%		38%	40%

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