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# Rational Use of Medicines: As an Overview

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## ABSTRACT

Most leading causes of death, disease and disability in developing countries can be prevented, treated, or at least alleviated with cost effective essential medicines. Despite this fact, millions of people are deprived of access to essential medicines. Many of those who do have access, are given the wrong treatment, receive too little or too much medicine for their illness, or do not use the medicine correctly, adding to the problem of irrational use of medicines. Rational use of medicines is essential in today's situation, especially in a country like India, where there is a wide disparity in the availability of medicines amongst cities and villages. The concept of the rational use of medicines has not yet penetrated the minds of health care providers and the public, and as a result there is rampant irrationality in both the medicines available, as well as the medicines prescribed. This article, attempts to explain to all, the various aspects related to essential medicines, their rational use, their irrational use, the concept of Fixed Dose Combinations (FDCs), and the role of Education in the Rational Use of Medicines.

**Keywords:** RUM, Essential Medicine, Nonessential Medicine, FDC.

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# INTRODUCTION

The rational use of medicines (RUM) contributes to high-quality health care while irrational use leads to health hazards and wastage of resources that are already insufficient in the majority of health care systems. Overuse, underuse or misuse of medicines that characterize irrational use has been called a problem beyond rationality that persists and is difficult to eliminate. Continuous training is required, combined with monitoring, feedback and reinforcement. Educating all concerned in the appropriate and correct use of medicines becomes a critical strategy to solve the problem of irrational use.

The requirements of the rational use of medicines can be fulfilled only if the process of both prescribing and dispensing is appropriately followed. This includes steps concerned with proper diagnosis, correct prescribing, dispensing, and giving proper information to the patient. In this article, we shall focus on promoting the rational use of medicines

By the end of this module, people will be able to understand

- The *essential medicines list* and its importance.
- The concept of the rational use of medicines.
- Irrational use of medicines
- The adverse impact and factors influencing the irrational use of medicines.
- The concept of Fixed Dose Combinations (FDCs).
- The Role of Education in the Rational Use of Medicines.

**Essential medicines concept[1]:**

'Selecting a limited ranges of medicines to improve access to health care and quality of health care' .The implementation of the concept of essential medicines is intended to be flexible and adaptable to many different situations. Essential medicines are those that satisfy the priority health care needs of the population.

Careful selection of a limited range of essential medicines results in:

- ❖ A higher quality of care,
- ❖ Better management of medicines (including improved quality of prescribed medicines)
- ❖ More cost effective use of available health resources.
- ❖ Better inventory management.

**The WHO Model List of Essential Medicines:**

The WHO Model List of Essential Medicines is a useful reference, derived from the consensus of recognized international experts and updated every two to four years. The medicines that

appear on this list are recognized as safe, efficacious and cost effective**.**

This list contains medicines that have been studied carefully to gauge their effectiveness in treating specific conditions, and comparing the value (effect or cure) they provide, in relation to their cost. The *essential medicines* concept (then known as the Essential Drugs Concept) was defined in 1975, and followed up in 1977, with the first WHO Model List of Essential Medicines. The Model List has formed a key component of the information required by countries, in relation to their medicine procurement and supply programmes.

**The National List of Essential Medicines - (INDIA):**

The Ministry of Health and Family Welfare, Government of India came up with a National List of Essential Medicines in 2003. The list includes 392 medicines in 27 different categories. Unfortunately in India this list has so far not been strictly followed, as a result of which thousands of drugs and FDCs continue to be manufactured and marketed. The rationality of many of these continues to be doubtful, and the consequence is that the people continue to consume irrational drugs and drugs of doubtful efficacy. On the other hand, some medicines listed on the Essential Medicines List are not easily available in our country.

**The importance and advantages of the essential medicines concept**

**A list of essential medicines is an immensely useful tool for**:

1) Policy making.

2) Selection, procurement, distribution and quality assurance.

3) For financing.

4) For promoting rational use:

- When a limited list of *essential medicines* represents the physician's consensus on the treatment of first choice, the quality of care improves.
- Irrational treatments are avoided.
- Physicians become familiar with a smaller number of medicines- thus promoting rational drug use.

5) For training health professionals: A selected list of *essential medicines* can form the basis for training health professionals in the proper use of medicines.

6) For providing information and imparting education relating to medicines: Patient education and efforts to promote proper use of medicines by patients are enhanced when centered on Specific medicines.

**Advantages of having an Essential Medicines Concept to a pharmacy:**

- Fewer number of medicines, leading to a fewer number of brands that need to be stocked.

- Better inventory control.
- Easier to remember names because of a fewer number of medicines.
- Less confusion in brands because of a fixed number of medicines.
- Fewer drug interactions and adverse drug reactions.
- If there are fewer medicines, pharmacists can remember more information about each Medicine, rather than remembering bits of information for all the medicines in the market.

## RATIONAL USE OF MEDICINES

**The concept of the rational use of medicines**

The aim of any **medicine management system** is to deliver the right medicine to the Patient who needs the medicine. The steps of selection, procurement, and distribution are necessary precursors to the rational use of medicines. The Conference of Experts on the Rational Use of Drugs, convened by the World Health Organization (WHO) in Nairobi in 1985, defined rational use as follows:

"The *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 at the lowest cost to them and their community."

The requirements of the rational use of medicines can be fulfilled only if the process of both prescribing and dispensing is appropriately followed. This includes steps concerned with proper diagnosis, correct prescribing, dispensing, and giving proper information to the patient. In this module, we shall focus on the role of a pharmacist in promoting the rational use of medicines.

**Irrational use of medicines**

The irrational use of medicines includes cases in which,

- A medicine is prescribed where none was needed.
- Medicines are not prescribed according to Standard Treatment Guidelines (STGs), or ineffective or unsafe medicines are prescribed.
- Effective and available medicines are underused.
- Medicines are used incorrectly.

The irrational use of medicines has an adverse impact on the outcome of therapy and cost, and may cause adverse reactions or negative psychosocial impacts.

**Examples of the irrational use of medicines**

Prescribing patterns, unfortunately, do not always conform to fixed criteria, and hence can be classified as *inappropriate or irrational*. Common patterns of irrational prescribing, may, therefore be manifested in the following ways.

**The medicine is a rational one, but:**

**1. It was used even though it was not needed**

Example:

- Unnecessary prescribing of antibiotics for viral colds and coughs, and viral diarrheas. (Such viral infections cannot be cured by antibiotics since antibiotics are antibacterial, and do not work against viruses).
- Use of injections to give placebo effect to patient, or where oral medicines would have been sufficient.

**2. Medicines not prescribed according to Standard Treatment Guidelines*(STGs)***

Physicians often do not prescribe in accordance to STGs.

Example:

- Use of a higher generation of antibiotics, e.g. cefotaxime, cefuroxime, where narrow spectrum antibiotics would have done the job.

**3. Under use of available effective medicines**

Failure to provide available, safe, and effective medicines

Example

- Failure to prescribe, or insufficient information about ORS for acute diarrhea.
- Prescribing antibiotics for less than the required duration.

**4. Incorrect use of medicines**

The use of correct medicines with incorrect administration, dosages, and duration

Example:

- Patients are given the wrong dose (either under dose or overdose)
- Patients are not given proper instructions, and may swallow a chewable tablet.

**Use of Irrational Medicines**

**Ineffective medicines and medicines with doubtful efficacy.**

Excessive and unnecessary use of multivitamin preparations or tonics is an example of this prescribing pattern.

**Adverse impact of irrational use of medicines**

The inappropriate use of medicines on a wide scale can have significant serious effects on health care costs as well as on the quality of drug therapy and medical care. Other negative effects are,

increased likelihood of adverse reactions, and a patient's inappropriate dependence on medicines.

**Impact on quality of drug therapy and medical care**

- Inappropriate prescribing practices can, directly or indirectly, jeopardize the quality of patient care and negatively influence the outcome of treatment.
- The under use of ORS for acute diarrhea, for example, can hinder the goal of treatment: to prevent or treat dehydration, and thus prevent death in children.
- The likelihood of Adverse Drug Reactions increases when medicines are prescribed irrationally. Misuse of injectable products, for example, has been implicated in a high incidence of anaphylactic shock.
- Over dosage or under dosage of antibiotics and chemotherapeutic agents also leads to the rapid emergence of resistant strains of bacteria or the malaria parasite.

**Impact on cost**

- Overuse of medicines, even essential ones, leads to excessive expenditure on pharmaceuticals, and waste of financial resources, by both patients and the health care system.
- In many countries, expenditures on nonessential pharmaceutical products, such as multivitamins or cough mixtures, drain limited financial resources that could otherwise be allocated for more essential and vital medicines and related products, such as vaccines or antibiotics.
- Inappropriate under use of medicines during the early stages of a disease may also produce excess costs by increasing the probability of prolonged therapy and eventual hospitalization.

**Psychological Impact**

- Over prescribing communicates to patients that they need medication for all conditions, even trivial ones.
- The concept that there is a pill for every ill is harmful.
- Patients begin relying on medicines, and this reliance increases demand.
- Patients may demand unnecessary injections because during their years of exposure to modern health services they may have become accustomed to having practitioners administer injections.

**How a Pharmacist may be promoting irrational use of medicines: -**

- By recommending prescription medicines on his own even though the law does not permit it.

- When recommending OTC medicines, he may recommend/provide:
- Irrational medicines and combinations.
- Inappropriate dosage.
- Improper medicine for a particular condition.
- Insufficient or inappropriate information about the medicine/s, dosages, timings, etc, leading to improper dosing by the patient.
- By being tempted to stock and push/recommend medicines that are costly, or those which offer better schemes/profit margins, but compromise on genuine need and rationality.
- By following/copying prescribing patterns similar to those of physicians.
- By passing on misleading information from pharmaceutical companies/medical representatives to clients.

**Developing a strategy for pharmacists to promote rational use of medicines:**

Pharmacists need to motivate themselves to promote rational use of medicines. They should make an effort to acquire knowledge about *Essential medicines* and rational use. They prepare a list of rational OTC medicines. They recommend only these medicines to their clients. If clients ask for irrational OTC medicines, try to explain to them why they should not use those particular medicines. They should recommend rational ones. The rational medicine recommended must be used correctly, and its misuse should be avoided. Pharmacists should talk to the client about the medicine, and its proper use and advice against misuse. Starting with their clients, pharmacists must try to educate the public about the rational use of medicines through leaflets, pamphlets and poster displays in the pharmacy.

## FIXED DOSE COMBINATIONS (FDC)

**Fixed-Dose Combinations (FDCs)** are combinations of two or more active drugs formulated as a single formulation .If combined rationally, they provide the advantages of combination therapy while reducing the number of prescriptions and the associated costs. If combined irrationally, they may have adverse effects or improper dosing, and also lead to increased cost.

**Rationale for Combination Therapy**

All drugs have unwanted side effects in addition to the desired therapeutic effect. The idea of combining two or more drugs with complimentary modes of action is to produce additivity of the desired therapeutic effect but not of the side effects.

**For example,** Consider the combination co-trimoxazole (trimethoprim + sulfamethoxazole).The 2 FDC drugs in this, block 2 consecutive steps in biosynthesis of essential nucleic acids and

proteins in bacteria, thus killing bacteria more effectively than each drug could have done independently.

**Advantages of Fixed Dose Combinations**

- Combination medicines have the advantages of combination therapy as well as advantages related to reducing the number of pills to be taken.
- Reduced administration costs stem from simplified packaging, fewer prescriptions, and lesser dispensing time and cost.
- Reducing the number of pills diminishes the complexity of the regimen, so that improved patient adherence is expected with FDCs.
- FDCs can improve compliance in the treatment of chronic infectious disease, where partial adherence can lead to the development of drug-resistant strains, treatment failure and a threat to public health.

  An example of this is the treatment of TB and HIV.
- The side effects of one medicine can be reduced by combining it with another medicine in a FDC. (e.g.carbidopa reduces the side effects of levodopa)
- The efficacy of one medicine can be synergistically increased, by combining it with another. (Some examples of this are the combination of estrogen and progesterone in oral contraceptives; the combination of sulfamethoxazole and trimethoprim; pyrimethamine and sulfadoxine for the treatment and prophylaxis of falciparum malaria).

**Disadvantages of Fixed Dose Combinations:**

- Flexibility of dosage (titration of dose of medicine/s to suit individual patients) is not possible with fixed combinations (e.g. FDC of 10mg Atorvastatin + 5mg Amlodipine)
- Fixed drug combinations increase the price of the medication if unnecessary drugs are included. (for example, FDC of Ibuprofen + Paracetamol + Caffeine)
- One of the drugs in the combination may be superfluous or wasteful. (for example, the Combination of vitamins with iron.)
- Most combinations do not have a sound rationale, (for example, the FDC of more than one analgesic).
- With combination medicines, the incidence of adverse effects increases, (for example, the FDC of more than one NSAID).
- In FDCs, there is always a chance that individual medicines may not be present in adequate amounts,(for example, multivitamins).

- ❖ Incompatible pharmacodynamics (FDC of antihistaminic with an antidiarrheal is d*angerous.* The antihistaminic action may mask other symptoms and make accurate diagnosis and treatment difficult)
- ❖ The physician's and the pharmacist's ignorance of contents and composition of formulation can cause serious problems.
- ❖ It is difficult to identify/pinpoint which medicine in the FDC has caused an adverse effect.

**Rational combinations recommended by WHO**

The W.H.O. through its Essential List recommends only the following FDCs:

- Amoxicillin + Clavulanic acid
- Artemether + Lumefantrine
- Benzoic acid + Salicylic acid (external use)
- Carbidopa + Levodopa
- Ethinylestradiol + Levonorgestrel
- Ethinylestradiol + Norethisterone
- Ferrous salt + Folic acid
- Imipenem + cilastatin
- Iopinavir + Ritonavir
- Isoniazid + Rifampicin
- Isoniazid + Ethambutol
- Isoniazid + Thioacetazone
- Lidocaine + Epinephrine
- Neomycin+ Bacitracin (external use)
- Rifampicin + Isoniazid + Pyrazinamide
- Rifampicin + Isoniazid + Pyrazinamide +Ethambutol
- Sulfadoxine + Pyrimethamine
- Sulfamethoxazole + Trimethoprim

Surprisingly, even in the presence of regulatory guidelines and the WHO model list of essential medicines(which recommends only the above FDCs), hundreds of other FDCs are being used widely in our country.

The most widely prescribed FDCs that do not have a rational basis are mostly analgesics, multivitamin combinations, and cold and cough mixtures.

**Some examples of Irrational Fixed Drug Combinations available in today's market**

- Combination of antibacterials and antiamoebics.
- Multivitamin preparations.
- Painkillers often combined with caffeine.
- Tonics containing incorrect proportions of vitamins and minerals.
- FDCs of Nimesulide with other drugs.
- Cough suppressants and expectorants in the same cough mixtures.

## THE ROLE OF EDUCATION IN THE RATIONAL USE OF MEDICINES

**Challenges identified from past experience**

Challenges in the area of rational use of medicines include a lack of an organization that has ownership of the programme. It is not very relevant to inform doctors, nurses, pharmacists, the general public and others about the rational use of medicines in situations when there are no medicines. Access to essential medicines must be coupled with their rational use. The topic of rational use of medicines does not generate the kind of enthusiasm that more easily visible health problems such as avian influenza and HIV/AIDS do. At present, the rational use of medicines is not promoted as much as other health programmes. The availability of medicines in many parts of the world is poor, and prescribers are not always aware of drug prices. Prescribers often do not consider whether the patient will be able to buy the medicines they prescribe. Patients are not in a position to question about the medicines prescribed for them.

There is also 3M issue in RUM – "Medicines Mean Money". Often, RUM means less profit and income for those dealing with medicines, usually the prescribers or dispensers. This conflict is particularly relevant to South Asia where health insurance is virtually non-existent and health care providers derive part of their income from selling medicines from their own pharmacies. In addition, the vigorous and often excessive promotion by pharmaceutical companies plays an important role. Thus, a health care system that removes perverse financial incentive regulates promotion and monitors prescribing should be the basis on which education for RUM must be built upon.

**Ensuring rational use of medicines:**

Not many countries are eager to develop a programme on RUM. In several countries, medicines are not always available in public hospitals and at the primary health centre level. Misinformation leads to irrational use of medicines. Sponsors of medicine programmes do not

always give priority to RUM. Sometimes, perverse financial incentives prevent rational prescribing.

**Promoting rational use of medicines in general education:**

RUM programmers do not usually get prime airtime on radio or television. Sustained efforts are needed in promoting RUM, which is expensive. The educational programmes must focus on the correct use of medicines. In some countries, product information leaflets are not available and people do not know how to get the correct information.

**Training health professionals:**

There is often a lack of communication experts with knowledge on RUM to provide well tailored information. Teaching curricula in medical, nursing and pharmacy programmes are full and there is no room for additional course module on RUM. Not much hard data is available to show that RUM has health and economic benefits. RUM often loses priority to counterfeit or sub-standard drugs. Health care professionals often do not have ready access to correct information on medicines.

**Obtaining political support:**

Programmes on RUM do not get adequate budget. Unjustified and unethical claims for medicines in the press and television counteracts the message of RUM. Regulation on improper promotion of medicines is usually weak or non-existent.

**Public education**

Public education in the appropriate use of medicines is needed because without it, people lack the knowledge and skills to make informed decisions. Public education in the rational use of medicines includes patient instruction at the time of illness in the proper use of prescribed or dispensed medicines and instruction to the public at large, or specific target groups, in the principles and practical use of appropriate medicines, including non-medicine therapies. Women's empowerment and education at schools and colleges can act as a facilitating factor in the rational use of medicines. Education can be provided through street plays, patient information leaflets and talks for the lay public. Materials like posters, comics, flip charts, puppet shows, radio/TV programmes, newspapers and magazine articles, songs and documentaries are useful tools. The media could be used more to further the cause of the rational use of medicines and, particularly, to draw the attention of political leaders to support the cause. Awareness can also be created through events such as special days, marches, walks and special postage stamps, awards, public lectures and possible identification of national ambassadors in the rational use of medicines. Some of the specific programmes in public education are summarized below.

**Patient-oriented programmes:**

The Delhi Society for Promotion of Rational Use of Drugs has shown that patients who had proper information about prescribed medicines know about the medicines and how to use them when compared to the control group. They also retained the knowledge of their medicines.

**Community-oriented programmes:**

A randomized controlled study in Nepal showed the impact of an article on the use of medicines in the community. The group who read the article on cough and diarrhoea medicines knew more about the medicines and the precautions to be observed when taking them. A study in Indonesia on the effect of an interactional group discussion on overuse of injections showed that there was a decrease in injections in the intervention group when compared to the control group.

**Women, women's groups and mothers:**

A study in Nepal evaluated the impact of a wall poster on antibiotics. It revealed that messages with prominent layout were understood by more households than the lengthy and congested message. Another study in Nepal showed the effect of creating awareness among schoolteachers and women's groups on the use of medicines through training. The results indicated that both groups had better knowledge about medicines at the end of the training period and even two and six months later in schoolteachers.

**Drugstore clerks and sellers:**

A study in the Philippines on drugstore clerks and sellers used interactive group discussions with senior drugstore clerks and mothers. Another intervention was face to- face meetings at the drug stores. Both interventions reduced dispensing of amoxicillin for acute respiratory infections that are caused by virus. There was no change observed in the use of amoxicillin in the control group.

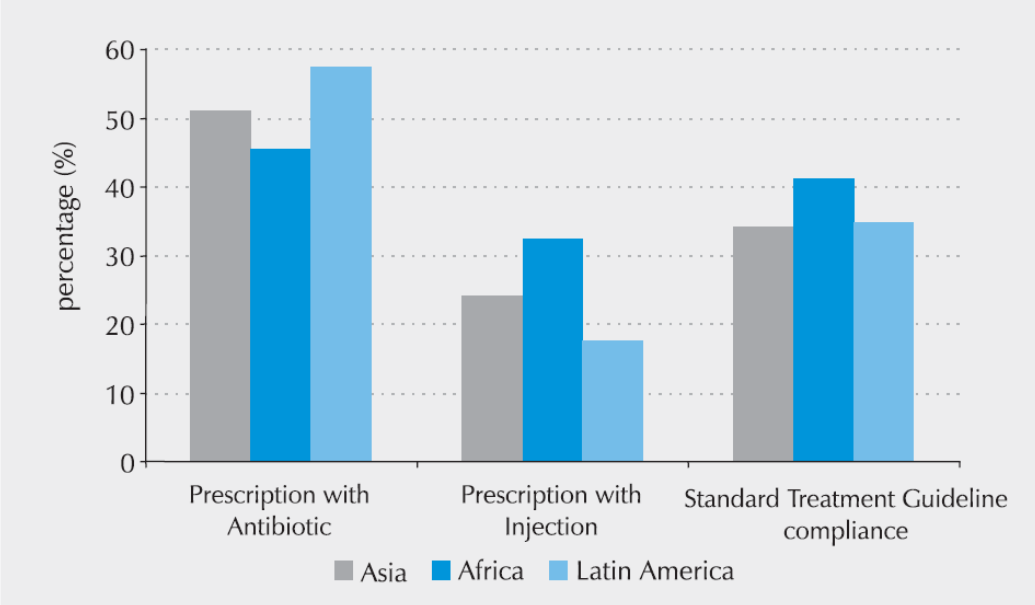
**Educating policy makers, political leaders, Planners and bureaucrats**

It is evident that political will is necessary for implementing a successful programme on the rational use of medicines. Policy makers, political leaders, planners and bureaucrats need to be made aware of and motivated to promote the rational use of medicines. One method could be by using the media and disseminating information in newspaper articles, editorials, press releases and through TV. Another way could be by inviting them to meetings, make keynote addresses and meet experts in the area of rational use of medicines. Having a special day such as Rational Use of Medicines Day once a year or giving awards for outstanding work in the area of rational use of medicines would be useful. Initiation of a briefing programme for bureaucrats and incentives to encourage scientists and policy makers to work together should be pursued. There is a need for governments to have a long-term strategy and to have focal points for programmes

on rational use of medicines, including a knowledge centre and sustained support for continuing medical education programmes. Successful results are possible if backed by the political will of policy makers, political leaders, planners and bureaucrats. It is imperative to get them involved and interested. The involvement of communication experts to prepare appropriate messages and deliver these to the public, health professionals, students, policy makers, politicians and bureaucrats will go a long way in strengthening the programme on education in the rational use of medicines.

**Vision for the future**

Approaches to enhance the role of education in the rational use of medicines are presented. It includes: (a) general measures such as the establishment of a knowledge centre on the rational use of medicines, greater use of electronic media and resources for providing education and information. (b) Empowerment of the general public/consumers in the proper use of medicines. (c) Greater involvement of professional societies of doctors, pharmacists, nurses and other categories of health personnel such as medical laboratory technologists, physiotherapists, occupational health personnel are needed in promoting the rational use of medicines; and (d) involving policy makers, political leaders, planners and bureaucrats in guiding strategic planning, initiating activities and providing resources to promote the rational use of medicines. However, as mentioned earlier it is vital to health care system that allows education to have its full effect and also discourages bad practice.




Source: WHO Policy & Standards of Medicines database, August 2004. (Baseline data covering all diseases and all ages.)

**Figure 1: Regional variation in prescribing(1990-2004)**

The rational use of medicines requires that patients receive medications appropriate to their needs in doses that meet their individual requirements, for an adequate period of time, and at the lowest cost to them and their community[2]. Unfortunately, the irrational use of medicines is a major problem worldwide. WHO estimates that more than half of all medicines are prescribed, dispensed or sold inappropriately, and that only about half of all patients take them correctly. Figure. 1 shows data from the WHO Policy and Standards of Medicine database of drug use surveys done in developing and transitional countries in Asia, Africa and Latin America. According to the survey, only about 40% of patients treated at primary health care level (mostly in the public sector) were treated in compliance with standard treatment guidelines.

The overuse, under use, or misuse of medicines results in wastage of scarce resources and widespread health hazards [3]. Thus, rational use of medicines would bring health care within the reach of the poor by reducing costs. Access to health care and, therefore, to essential medicines is a human right [4,5]. Essential medicines are those that satisfy the priority health care needs of the population. Thus, if they are available, affordable, are of good quality and used properly, medicines can offer simple, cost-effective answers to many health problems. There is, therefore, a need to develop educational strategies for health care practitioners and consumers in the rational use of medicines. It has been stated in the WHO Essential Medicines Strategy 2004-2007 that up to 50% of the medicines in the world may be wasted due to inappropriate prescribing and patients' failure to comply with appropriate treatment regimens [6].This appears to be a colossal waste of resources and misuse of medicines in a situation where lack of access to life-saving and health-supporting medicines for two billion poor people of the world stands as a direct contradiction to the fundamental principle of health as a human right [7,8].

In 1999, WHO estimated that roughly 80% of the global population without access to essential medicines was living in low income countries (Figure. 2). In contrast, only 0.3 percent of those lacking access to essential medicines lived in high-income countries [9].What is most disturbing is that even though a large percentage of the health expenditure in these countries is on medicines, the medicines that do reach the people are not well utilized. Irrational use of medicines is a serious problem worldwide. Policies to promote rational use of medicines need to address the prescribers, dispensers and consumers of medicines as well as manufacturers and sellers, and traditional healers. All these factors have an important influence on how drugs are used. A variety of strategies and interventions are needed to influence medicine use[10]. The 12 core interventions for promoting the rational use of medicines are given in Box 1.

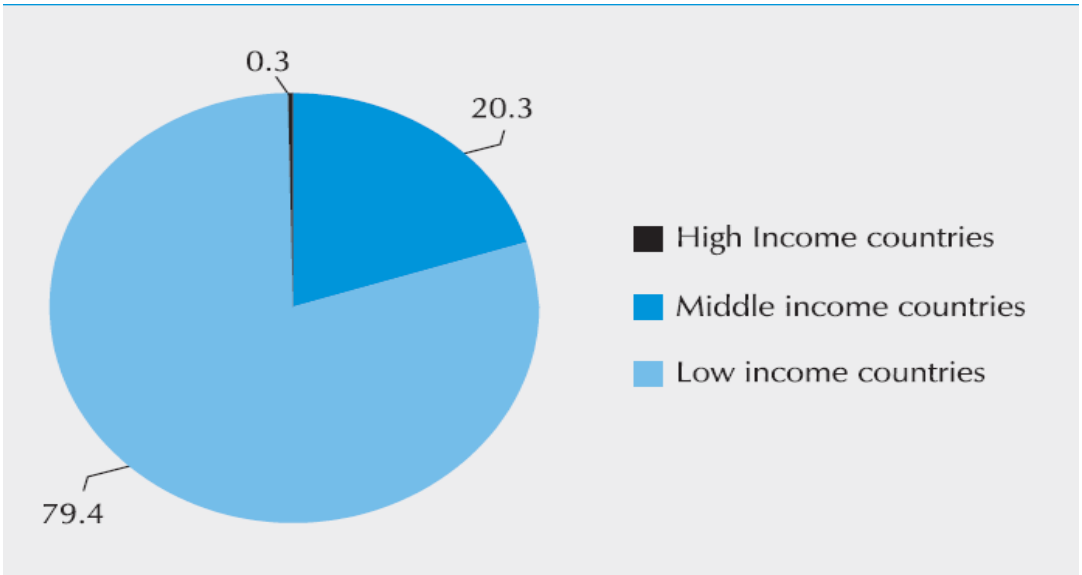



**Figure 2:Distribution (%) of country income groups without access to essential medicines in 1999**

Source: WHO Medicines Strategy: countries at the core 2007-2008 [6]

**Box 1: Twelve core interventions to promote the rational use of medicines**

(1) A mandated multi-disciplinary national body to coordinate medicine-use policies
(2) Clinical guidelines (standard treatment guidelines, prescribing policies)
(3) Essential medicines list based on treatment of choice
(4) Drugs and therapeutics committees in districts and hospitals
(5) Problem-based pharmacotherapy training in undergraduate curricula
(6) Continuing in-service medical education as a licensure requirement
(7) Supervision, audit and feedback
(8) Independent information on medicines
(9) Public education about medicines
(10) Avoidance of perverse financial incentives
(11) Appropriate and enforced regulation
(12) Sufficient government expenditure to ensure availability of medicines and staff

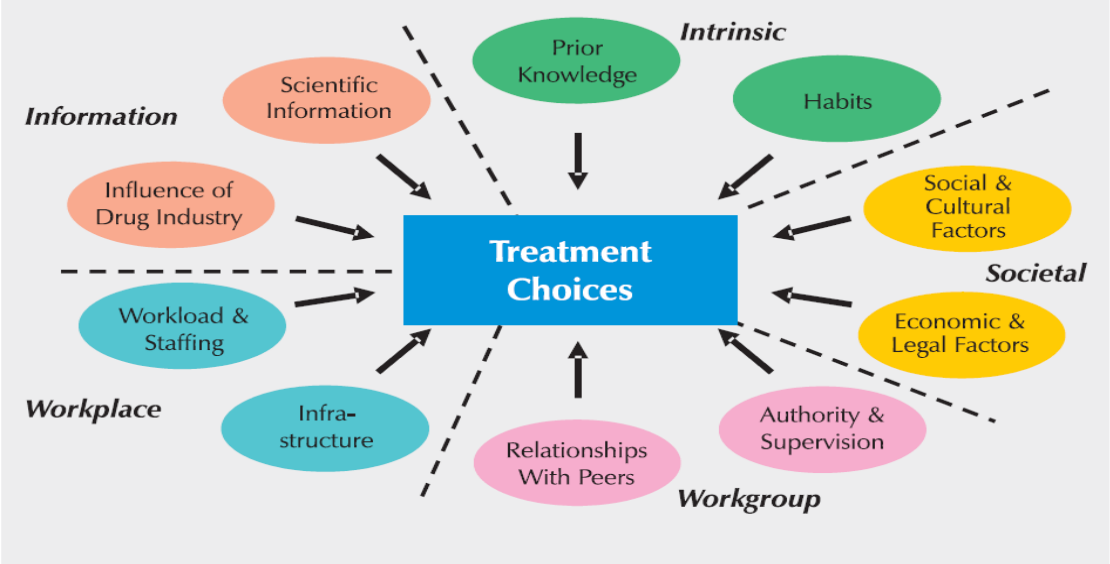
Source: Promoting rational use of medicines: core components [10]

**Table 1: Educational strategies to improve the rational use of medicines**

| Strategy | Activities |
|---|---|
| Training of providers | • Undergraduates education<br>• Continuing in-service medical education (seminar, workshop)<br>• Face to face persuasive outreach, eg. Academic detailing<br>• Clinical supervision or consultation |
| Printed materials | • Clinical literature and news letters<br>• Formularies or therapeutics manuals<br>• Persuasive print materials |
| Media- based approaches | • Posters<br>• Audio tapes, plays<br>• Radio, television |

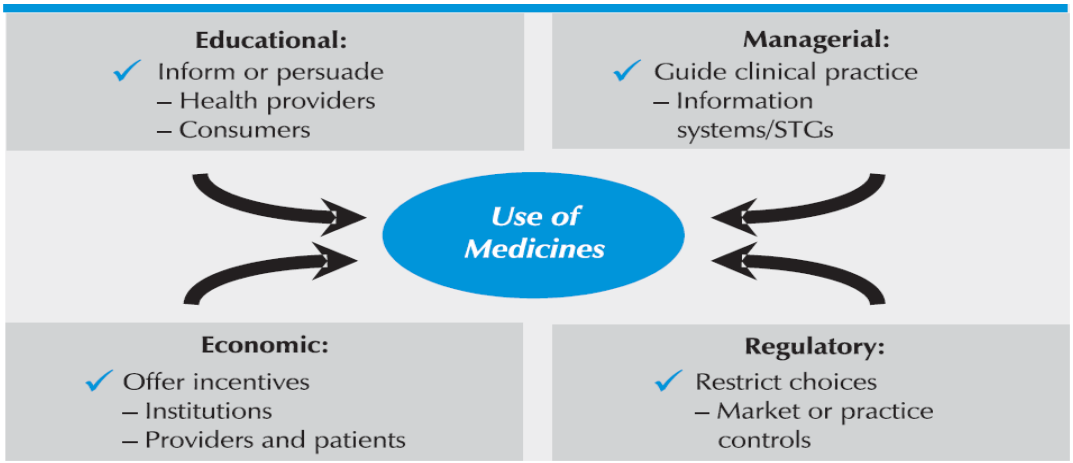
Source: Holloway, K(200).Rational use of drugs: an overview[11]

It is expected that there would be a change in the situation if these two activities are undertaken aggressively. The current wastage of medicines due to irrational prescribing and erratic compliance would be reduced and more people, particularly the poor, would receive medicines and take them properly. It is not that the poor are not spending on medicines, but today, a large proportion of this expenditure is unnecessary and wasteful, very often leading to impoverishment. A good programme on the rational use of medicines complemented by a programme providing information and education for all concerned in the proper use of medicines would go a long way in improving this situation. Presently, most governments and private organizations are reluctant to allocate resources for this component because they may not have realized the importance of providing such information. It should be clearly understood that all efforts made in other areas, for example, the large percentage of resources allocated for purchase of medicines, establishment of distribution systems and quality assurance mechanisms, would be largely wasted if the medicines are not prescribed and taken as they should be. More emphasis should be placed on these last two important steps, which if improved, could render the whole system more effective and less wasteful than it is now. Educational strategies are very important in promoting the rational use of medicines. However, educational strategies alone will not be sufficient to ensure continued rational use of medicines. There are many other factors that influence the use of medicines and unless these are addressed, it will not be possible to change provider and consumer behavior concerning drug use. Figure. 3 illustrates the different factors which influence the use of medicines.




Source: WHO/INRUD course on promoting rational use of medicines, data on website (http://www.who.int/medicines).

**Figure 3: Factors that influence the use of medicines**




Source: WHO/INRUD course on promoting rational use of medicines, data on website (http://www.who.int/medicines).

**Figure 4:Strategies to improve the use of medicines**

## Regional Perspective

### *India*

The Delhi Society for Promotion of Rational Use of Drugs has been holding workshops in rational use of drugs throughout the country. These are typically two-day workshops in which doctors from both the public and the private sectors take part. These workshops are very popular and have been attended by over 1000 doctors. The faculty is provided by DSPRUD and consists of experts – clinical pharmacologists, pharmacologists and pharmacists who have been working in this field. The movement has spread and such workshops are now being organized by state societies in Rational Use of Medicines such as the Rajasthan Society, the Himachal Pradesh Society, and similar societies in West Bengal, Bihar and Punjab. Active programmes are being

carried out in Andhra Pradesh, Maharashtra and Tamil Nadu. All these activities were planned and carried out by the India-WHO Programme in Essential Drugs and implemented by DSPRUD. The effects of such programmes have also been assessed in different studies. The programmes in India, by and large, go a long way in providing information and creating awareness. It has been seen that participation at one workshop is not enough to alter prescribing behaviour. If such workshops are held regularly, there is a possibility of changing the prescribing behaviour. The type of intervention described above pays dividends and spreads the message to a much wider segment of the population than individual studies can. Two such interventions have been initiated in India by DSPRUD in conjunction with the Health University of Maharashtra and the Government of Rajasthan. Training modules in the rational use of drugs were prepared for inclusion in the undergraduate medical curriculum for all medical colleges in the state of Maharashtra. These modules were then discussed at the level of the Health University of Maharashtra and approved and adopted with some modification. These have now been included in the curriculum for Pharmacology. This means that through one intervention, all undergraduates in 17 medical schools in Maharashtra – all affiliated to the Health University – are now being made aware of the rational use of medicines. This is the type of intervention that needs to be encouraged. Furthermore, the impact on prescribing needs to be assessed and the results published. In the state of Rajasthan, all doctors who join the state health service go through an orientation course before their first posting. The Rajasthan group working with DSPRUD developed a module on the rational use of drugs. After approval, it was included in the orientation programme. Thus, all doctors in government service would become exposed to the concept and practice of the rational use of medicines. The module was used for several years. Unfortunately, this module was dropped. The reason is interesting and illustrative of the problems that arise at the ground level. The earlier induction programme was supported by the World Bank. The officers implementing the programme thought that the module on the rational use of drugs was important. The funding source was changed after a few years, and the Reproductive and Child Health Programme started funding the induction programme and the module was removed because the officials in charge of this programme did not feel it was necessary to include a module on the rational use of medicines. This underlines the need for evaluation of impact on prescribing. If it is seen that there is significant improvement in prescribing coupled with savings in resources, the donor would like to support such a programme. Several workshops have been held for pharmacists and stores management staff but most of these have been held to improve management procedures of medicines procurement,

storage and distribution. These workshops carried out, for example, regularly at the National Institute of Pharmaceutical Education and Research (NIPER), Chandigarh and at the College of Pharmacy at Annamalai University, under the auspices of DSPRUD have markedly improved the functioning of the medical stores. Stocks-out days have decreased, drugs near expiry dates are not being supplied and access to medicines has increased. Similar results have been obtained in programmes for stores personnel in the state of Delhi and in the Greater Mumbai Municipal Corporation (Chaudhury RR, personal communication, 2006).

**Recommendations for community programmes**

With these considerations in mind, one can now try to identify some groups, among the many, at whom educational programmes in the rational use of medicines could be aimed. There are many groups which come to mind – all of whom could profit by participating in the programmes. However, mechanism(s) need to be identified for interaction of relevant groups to achieve the educational objective. The different groups that could be considered are:

- Patients and Patient Groups
- Women's Groups and Self-Help Groups
- Resident Welfare Associations
- School Children
- School Teachers
- Village Communities
- Farmers' Groups
- Religious Groups and
- Nongovernmental Organizations (NGOs).

It is felt that patients need to be provided information with the hope that their relatives would also benefit from this exchange of knowledge. A second group would be women's groups and mothers. The importance of initiating programmes for women and for women's groups and mothers has been repeatedly stressed in the UN Millennium Development Goal Document [7].The third group is the students of today – the citizens of tomorrow. It is interesting that although studies on children have been initiated in many parts of the world, such studies have not been carried out, by and large, in countries of the South-East Asia Region. An active, aggressive and well-planned programme should therefore be initiated for patients, women and mothers and for children, including adolescents. All three groups would be interested in participating in the programmes – the patients because they are using the medicines, the women and the mothers

because they are looking after their families and also because they would not like money to be wasted on unnecessary medicines. The children would be interested because they are naturally curious at this age and are eager crusaders once they are convinced that what they are doing is the right thing. Let us look at each of these groups and identify what mechanisms should be used.

**General measures**

- It is essential that more resources be made available for providing education and information about the proper use of medicines and for creating the necessary public awareness on the rational use of medicines. However, even if more resources are not immediately available, existing resources should be allocated.
- The media could be used more to further the cause of the rational use of medicines and particularly to draw the attention of political leaders to this subject.
- More use should be made of the electronic media to disseminate the message of rational use of medicines and information on medicines. The role of Internet Interpersonal Communication should also be explored.
- A knowledge centre should be created for the rational use of medicines. This knowledge centre should provide reliable, objective and evidence-based information, which is the foundation of rational medicine use. In addition, a mandated multidisciplinary national body to serve as the focal point to coordinate medicine use policies is needed.

**Empowerment of general public/consumers**

- Information on the use of medicines should be provided, as a priority, to three categories of the public who would be able to make a difference. These are the patients who consume the medicines, and thereby improve compliance, women and mothers who play an important role in the health care of the family and school children, the citizens of tomorrow, who must have a proper perception about the use of medicines. As far as possible, programmes of face-to-face education should be planned as these have the most impact.
- Programmes on information about medicines should be carefully introduced to students in colleges, other than the health-oriented colleges, in universities, in technical institutes and in management schools. There is a vast resource of persons at these centres who could play a useful role in promoting the rational use of medicines.

**Health professionals**

- The undergraduate curriculum for doctors, pharmacists and nurses should contain well prepared modules on the rational use of medicines. These should be taught and should become part of the examination system.
- In addition, professional societies and the medical/pharmacy/ nursing associations need to be involved to take up the task of organizing continuing medical education programmes in this subject. Widespread dissemination of information to professionals can only be possible through these bodies.
- Training programmes need to be initiated for those categories of health personnel who have not yet been exposed to the concept and practice of rational use of medicines – physiotherapists, occupational health personnel and medical laboratory technologists – to have knowledge at least at the level of the consumer.
- Research should be carried out on aspects of use of medicines and especially on the expected economic benefits and therapeutic benefits of using medicines properly.
- Experts in communication should be engaged to prepare appropriate messages and deliver these to the public, health professionals, students, policy makers, politicians and Bureaucrats.
- Use should be made of media events such as special days, marches and walks, special postage stamps, awards, public lectures and possibly identification of national ambassadors in the rational use of medicines.

**Policy makers**

- All Induction Training Programmes for bureaucrats should include modules on the rational use of medicines and them therapeutic and economic benefits, in addition to ethical considerations, inherent in such a programme.
- Incentives should be given to encourage scientists and policy makers to work together using transnational scientists making organizational changes, redefining the starting point for knowledge transfer, expanding the accountability horizon and acknowledging the complexity of policy making.
- There should be sustained support for the continuing medical education and other education programmes so that a long term strategy could be planned and initiated.
- A mandated multidisciplinary national body to coordinate medicine use policies, when established, should regularly monitor the use of medicines, analyze data, disseminate information and make recommendations to further promote the rational use of medicines.

These are some of the possibilities for future activities. Each of these areas could be expanded into a programme in the rational use of medicines.

## CONCLUSION:

Governments, private health care institutions, individual health care providers and patients all have a responsibility to promote rational use of medicines. The professional and business angles of drug acquisition, prescription and dispensing must be regulated quite closely. This is best done by the professionals themselves, facilitated by the governments. Patients must be educated about rational drug use through the mass media or through private consultation for maximum gains to be derived from the medications available to them.

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