CHAPTER 2

LITERATURE REVIEW

This chapter provides the general theoretical framework and findings of previous research works related to respiratory tract infections, drug prescribing practices in AURI and factors affecting it, and standard treatment guidelines.

2.1 Drug Prescribing for Respiratory Infections

Respiratory tract infections are among the most common human health problems because of their high incidence and consequent economic costs. The number of ARI episodes (6-8) per child per year is similar in both developed and developing countries. The majority of respiratory infections are confined to upper respiratory tract infection and most of these are simple cough and colds. Mothers often bring their children with AURI to a clinic because of concerns about the child's cough, fever, sore throat, or blocked nose, or because of problems of feeding. Medicines for the symptoms of upper respiratory infections are sought both for the relief of discomfort and as a response to fear that the illness is potentially serious. The case management of ARI focuses on detection of and treatment of pneumonia but must also assure the adequate management of children with cough and colds who do not have pneumonia. Health care providers spend a significant amount of time caring for children who present with these symptoms, and under great pressure to treat them with "something". Their jobs are further complicated by a large number of preparations for cough and cold that are available, either by prescription or as over-the-counter preparations (WHO, 2001).

Cough and cold remedies are responsible for significant proportion of emergency calls to poison control centers in the USA, and accidental ingestion by children as well as inadvertent overdosing by parents are often serious enough to warrant admission. Nevertheless, substantial sums are spent on cough and cold medicines in the developing world as well as in industrialized countries. It has been estimated that global sales in 1985 of over-the-counter medicines for cough and cold amounted to US$ 3000 million (excluding eastern European markets). In 1987, sales of cough and cold syrups in the Philippines totaled US$ 47 million; in the USA the total was more than $2000 million (WHO, 2001). Many commercial cough and cold remedies contain several ingredients, including cough suppressants, mucolytics, oral decongestants, antihistamines and expectorants. Most drug combinations in cough and cold remedies have no rational basis, e.g. ineffective ingredients or ingredients with opposing effects are often combined, such as an expectorant with a cough suppressant. Many contain a large number of ingredients, often in individually therapeutic doses or with similar therapeutic properties. Combination drugs such as these should be avoided.

The common cold is a self-limiting condition and must be distinguished from other respiratory infections, such as pneumonia, otitis media, and streptococcal pharyngitis, for which effective therapy does exist. These more serious infections have specific signs and symptoms which are not present in common cold and which require specific antibiotic treatment (WHO, 2001). Almost all episodes of common cold in developing world are attributed to viruses. Several randomized controlled trials carried out in both developing and industrialized countries have shown that antibiotic treatment does not prevent complications, or shorten duration of illness, or prevent the development of pneumonia (WHO, 2001).

Antihistamines are the mainstay of therapy for allergic rhinitis (WHO, 2001), and the resemblance between cold symptoms and symptoms of allergic rhinitis led to the use of antihistamines for common cold. However, since histamine is not present in increased concentration in persons with upper respiratory infections, the rational for their use in the common cold has been questioned. An expert panel of clinicians and scientists concluded that while antihistamines were useful for allergy, "there are no convincing data to suggest that antihistamines are of benefit in upper respiratory infection". The panel stated that their use either alone or in combination products to treat upper respiratory infections was "inappropriate", and that further study of their possible role in the treatment of common cold or otitis media was not warranted.

As stated above, clinical experiences in many countries indicated the widespread use of cough and cold remedies, antihistamines and antibiotics for viral origin respiratory infections, contribute to inappropriate drug use and escalation of expenditures on medical costs. Majority of these problems could have been avoided if respiratory tract infections were diagnosed correctly and standardized treatments provided accordingly.

Surveys conducted in 1999 by MOPH in Thailand on 77 health facilities, interview of 130 health workers and review of 563 records, revealed that ARI cases accounted for 31.64 % of total children less than five years seeking services at health facilities. Pneumonia accounted for 7.66 % of all ARI case, 38.8 % of no-pneumonia cases received unnecessary antibiotics (MOPH, 1999). The national standard treatment guideline for ARI recommends that antibiotics should not be used indiscriminately and cough suppressants, mucolytic, or mixed formula antitussive, antihistamine (except treating allergies) to be avoided in young children.

Itthipanichahpong, Pavichitr and Tangphao (1994) conducted a study on respiratory drug prescribing during February 1989 to January 1990 at the outpatient clinic of King Chulalongkorn Memorial Hospital. A total of 1,513 prescriptions and corresponding OPD cards of patients suffering from respiratory diseases were collected, once a week over 52 weeks period. The results of this study revealed that upper respiratory tract infection was the most common disease constituting 26.04 %, asthma 10.44 %, bronchitis 6.21 %, chronic obstructive diseases 6.01 %, chronic cough 5.95 %, acute pharyngitis 3.27 % and acute tonsillitis 2.12 %. The study also revealed that among other drugs, amoxycillin was the most widely prescribed antibiotic in URI.

Antibiotics represent one of the most widely prescribed forms of drug therapy. In some cases, the antibiotics prescribed maybe inappropriate or too expensive (MSH,1997). Recent studies undertaken by WHO (2000) indicated that for every 100 respiratory infections, 20 % require antibiotic treatment. This means that 80 % of patients are treated with unnecessary medications thereby leading drugs directly into the sight lines of resistance. In laboratory samples as many as 70 % of chest infections are resistant to one of the first line antimicrobials. The longer the action is delayed, the number of the resistance is increased. Formerly, first-line medications were both effective and affordable. With the onset of resistance however, newer treatments are proving too costly to the vast majority of those living in poor developing nations. The alarming situation is due, in part, to widespread confusion over the difference between viral and bacterial respiratory infections. Both forms present the same clinical symptoms that can often only be distinguished by laboratory tests that are expensive and therefore unavailable in many parts of the world. While bacterial infections can kill, treating viral illness with antibiotics is not only ineffective but contributes to the development of resistance (WHO, 2000). This is particularly true when it comes to treating children with AURI.

Indicators were developed by INRUD in collaboration with WHO to be used as a measure of performace in three major areas (pharmaceutical prescribing practices, key elements of patient care and availability of facility - specific factors) related to the rational use of drugs in primary care (WHO, 1993). These indicators and methodology for collecting the necessary data was tested in Indonesia, Bangladesh, and Nepal. In close collaboration with the WHO the revised indicators were then used again in the Sudan, Uganda, Malawi, Nigeria and Tanzania. Bases on experiences gained from different countries, the following table provides the optimal value for some of these indicators.

Table 2.1: Proposed Indicators of rational prescribing

Indicator	Optimal value (%)
Prescriptions	
- mean number of drugs per prescription	<2
Percentage of drugs prescribed	
- under generic names	100
- containing an antibiotic	<30
- administering by injection	<20
- belonging to a list of drugs or to a formulary	100
Patient care	
Average length of consultation	?
Average duration of dispensing	?
Percentage of drugs	
- effectively dispensed	100
- correctly labelled	100
- whose dosage is correctly understood by the patient	100
Health services	
Percentage of availability of	
- drugs on an "essential drug list" or in a formulary	100
- Key drugs (for specific diseases)	100

Source: J. Dumoulin et al., 1998, page 45

Using these indicators, it is possible at least to investigate the general pattern of drug use and make comparison among health facilities. For example, as shown above, the optimal value for percentage of drugs containing an antibiotic should be less than 30%, however, studies from many health facilities in different countries has indicated that antibiotics are over prescribed and used mainly in AURI.

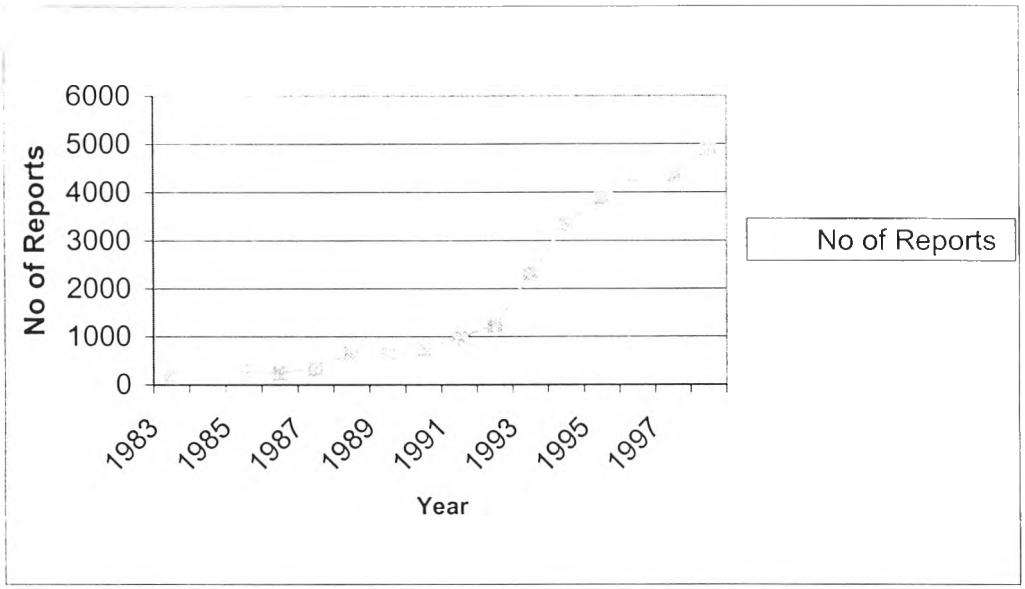
Antibiotics were prescribed for just over half the patients seen with colds or upper respiratory tract infections, and for two-thirds of patients seen with bronchitis in the US National Ambulatory Medical Care Survey 1992, with rural practices location being the only factor associated with a higher rate of prescribing in adults (Mant A., 1999 citing Gonzales et al.,1997). The same survey also revealed a higher rate of antibiotic prescribing in children with the same conditions (Mant A. citing Nyquist et al., 1998.) As indicated in several literatures, the overuse of antibiotics is widespread, but what could be the reason for such overuse? Most general practitioners will say that, if they prescribe antibiotics more often than necessary, it is due to patient demand. Sometimes, patients will ask for an antibiotic directly or say that they have found antibiotics helpful before. Sometimes, the doctor has previous experience that a patient will not want to return if no antibiotic is given. But, in fact, doctors expect the patient/parent to want an antibiotic prescription more often than the patients themselves say they do (Mant A. 1999 citing Cockburn and Pit 1997). The demand, when it is present, may reflect the belief that an antibiotic will speed recovery because, for example, the patient cannot afford time off responsibilities at home or work, but it is often appropraite not to prescribe but only to reassure and instruct taking simple remedies as symptomatic treatment for self limiting viral conditions.

Li Hui et al. (1997) studied patterns and determinants of use of antibiotics for acute respiratory tract infection in children in China. The WHO criteria to study the diagnosis and treatment of ARI given by 100 randomly selected health care workers in rural country and a total of 750 ARI cases were evaluated. The researchers found out that 47 % of children in the country hospital, 25 % of those in township and 18 % of those in the villages had already received antibiotics, available without prescription. Among the health workers antibiotic abuse (antibiotics for presumably viral diseases) was detected in the treatment of 97 % of cases, and severe abuse (such as prescription of two incompatible antibiotics) was detected in 37 %. Most patients with bacterial diseases received antibiotics, but inappropriate antibiotic treatment (dose or type) was observed in 63 % of these cases. The study concluded that abuse of antibiotics for ARI is a serious and costly problem in rural China, leading to widespread antibiotic resistance. This research has very significant relevance to the study under consideration, in particular using standard treatment guideline to evaluate drug prescribing practices.

According to a study done by Holloway and Gautam (1998) to describe the financial costs of irrational prescribing, more than one-third the value of all drugs dispensed to patients at selected public health facilities in rural hilly E. Nepal had been irrationally prescribed and, in effect, wasted. The study indicated that user fees (item fees, covering a full course of each item) were associated with 20% financial saving due to reduced irrational prescribing as compared to flat fees. Flat fees were reportedly associated with wastage due to irrational over-prescribing.

In Thailand, besides inappropriate use of drugs, including over-use or use with ignorance, tends to be on the rise (MOPH, 1999). This has resulted in health hazards from drug toxicities and allergies as shown in reports on adverse effects which rose from 176 cases in 1983 to 4344 cases in 1997 and about 4900 cases in 1998 (Figure 2.1).

Figure 2.1: Number of Reports on Adverse Drug Events of Drug Use, 1983-1998



Source: MOPH, 2000

There are some studies done in Thailand hospitals with respect to the prescribing of antibiotics. A study done in 1987 at Lumpang teaching hospital, northern Thailand on problems related to mild URI in children below 14 years of age and the use of antibiotics in treatment revealed that out of the 2,438 patients studied, 75.63 % were prescribed antibiotics (Suchchacahi, Insrikeaw and Phunkum-aye, 1987), which indicates that antibiotics are misused for mild URI that does not require antibiotics. Such misuses contribute to the increasing number of ADE, anitmicrobial resistance and increase cost of treatment.

The Department of Pharmacology, Faculty of Medicine, and King Chulalongkorn Memorial Hospital pharmacy staff (Itthipanichahpong et al., 1994) carried out a study on the relationship of drug prescribing and diagnosis at King Chulalongkorn Memorial Hospital OPD. Out of the total diagnosis made at OPD level, diseases of the cardiovascular, gastrointestinal and respiratory

systems comprised the three major health problems constituted 23.96 %, 22.85 % and 15.74 % respectively. Of all the prescriptions reviewed only 8.57 % of drugs were considered inappropriate and 9.95 % were prescribed questionably. The study group concluded that the problems associated with drug utilization arise primarily because of prescription writing and some practitioners are not fully familiar with the rational use of drugs in terms of their indications, efficacy, safety and affordability. The methodology used in this study did not explain sufficiently the criteria used to classify appropriate prescriptions from those of inappropriate ones.

Itthipanichahpong et al. (1995) studied the drug-prescribing practice for the elderly medical outpatients at King Chulalongkorn Memorial Hospital during January – December 1988. The study group collected 8,173 prescriptions and corresponding OPD cards once on different days of the week for a total of 52 weeks. Out of the total prescriptions collected, 22.9 %, which are the elderly, were targeted to measure the drug prescribing practices. It was found that the average number of drugs prescribed per encounter was 2.7, the average cost was 160 baht per prescription, 8.57 % of the prescriptions were considered to be inappropriate with respect to indications of the drugs, dosage, contraindications, drug interactions, dosage forms, and 9.9 % of the drugs prescribed were considered to be of questionable value. However, this study too does not provide enough information as to the methodology of measuring "appropriateness" of drug prescribing.

A study done at Siriraj Medical School, in 1986, found that only 8.79 % of patients at its internal medicine ward received antibiotics rationally (MOPH, 2000). From the studies done in Thailand teaching hospitals cited above, it is apparent that inappropriate use of antibiotics is a problem and an issue that requires an in depth study and immediate attention as it might have serious implications on development of antibacterial drug resistance strains of

microorganisms. Table 2.2 gives some information on estimated inappropriate use of antibiotics in teaching hospitals in some countries.

Table 2.2: Inappropraite Use of Antibiotics in Teaching Hospitals

Country	Inappropraite use (%)	Type/Department
Canada 1977	42	Surgical ward injections, antibiotics
	50	Gynecological ward
	12	Medical ward
USA 1978	41	All patients
Australia 1979	86-91	Prophylaxis
Canada 1980	30	Pediatric medical cases
Australia 1983	48	All departments
Kuwait 1988	39	Pediatric inpatient
Australia 1990	64	Patients on vancomycin
Thailand 1990	91	All departments
South Africa 1991	54	Gynaecology inpatients
	22-100	Unrestricted antibiotics
	41	All departments
Thailand 1991	79.7	Surgical prophylaxis
	40.2	Documented infection

Source: EDM 2000, citing HV Hogerzel, page 9

From the Table 2.2 inappropriate use of antibiotics in Thailand teaching hospitals in general has shown significant improvement in 1991 than it was in 1990. However, no change was observed with respect to the use of antibiotics for surgical prophylaxis. The overall improvement recorded in 1991 in Thailand teaching hospitals can be associated with the launching of ARIC in 1990 and other rational drug use initiatives taken by MOPH at national level. The over use of antibiotics in teaching hospitals in general remains a problem in most of the countries cited above.

The national data on surveillance of antimicrobial resistance indicates also that certain pathogenic microorganisms have shown resistance to selected antibiotics. The active surveillance data (1990 to 1995) obtained from the MOPH, ARIC, TB division, revealed that 35.6 % to 63 % of the Upper Respiratory Infection (URI) cases are generally treated with antibiotics, the maximum being at community hospitals and the minimum at regional hospitals (MOPH, 1999). The results of the active survellance data from MOPH and research findings from different institutions indicated the prevalence of AURI and unnecessary treatment with antibiotics, which implies that appropraite interventions should be selected to contain the alarming situation of antimicrobial resistance.

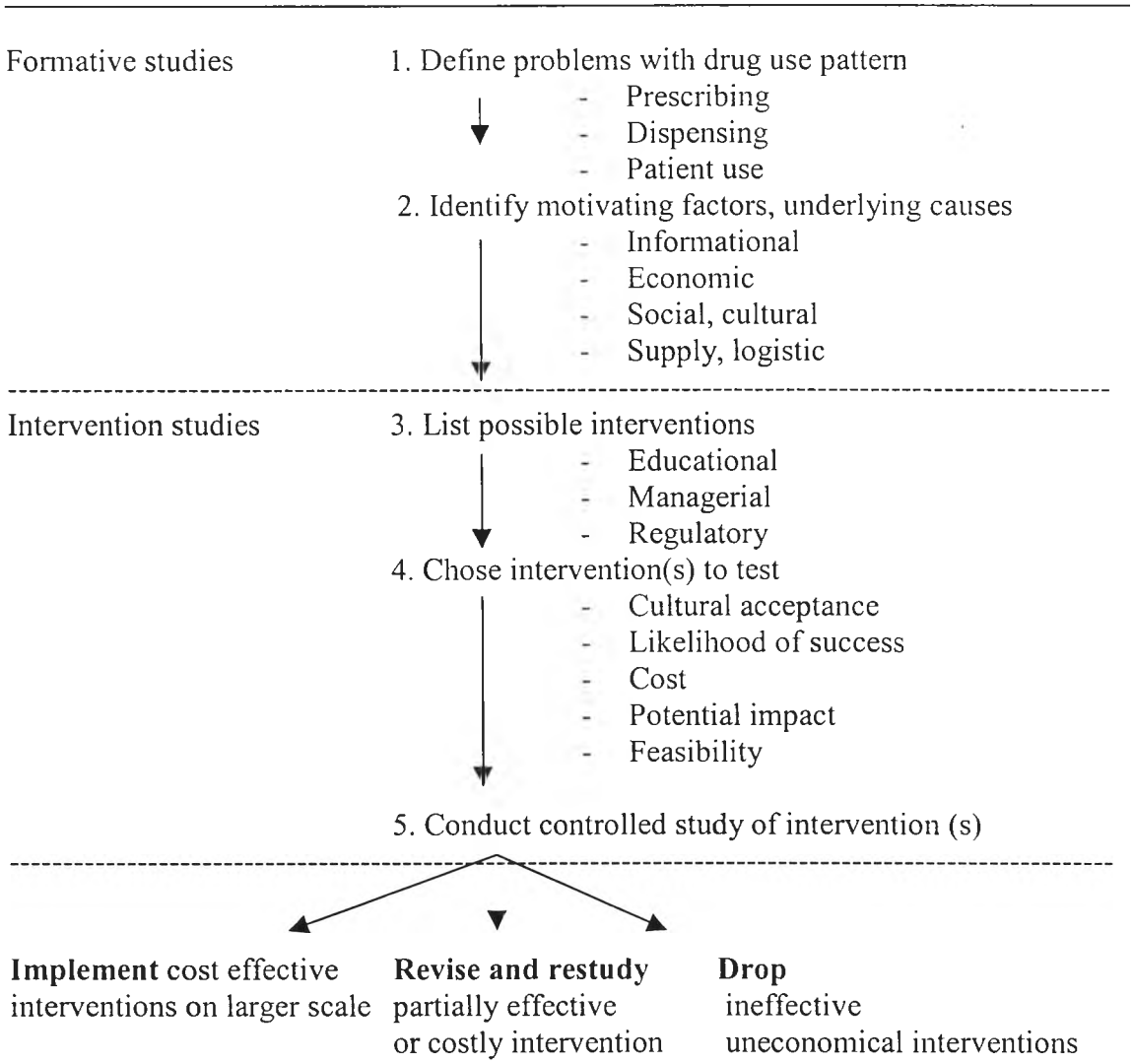
Generally, it is not easy to reduce the overall rates of prescribing of antibiotics, but several studies (Mant, 1999) have shown that antibiotic choice can be influenced, although it is hard to be sure exactly what has caused the change. Antibiotic choice can be narrowed by providing independent information on some specific issues in prescribing through a personal approach. This approach is variously called acadamic detailing, educational outreach or educational visiting. Public campaigns via the mass media may also help to ease pressure on the general practitioners by increasing awareness that antibiotics do not cure viral respiratory infections. At the individual patient level, it can be helpful to have some patient handouts ready.

The spectrum of rational drug use is wide ranging and includes proper selection of drugs, procurement, efficient management, dispensing and compliance to treatment by the patient. Prescribing is one aspect of drug use. The main objective of prescribing is to encourage rational use of drugs. "Rational" use means use with scientific knowledge to satisfy needs. Rational prescribing costs less when unnecessary or ineffective treatment is stopped, or

when equally effective drugs that cost less are selected. In practice, irrational prescribing usually costs more (Madrid, Velasquez and Enrique, 1998). Reducing the use of resources for irrational treatment allows these resources to be used for needs that have not been well satisfied. Problems in the area of drug use usually arise due to insufficient knowledge, misinformation, lack of confidence in medical advice, forgetfulness, inadequate access to health services and drugs, or some combination of these. In view of the wide scope of the drug use process in general, selection of appropraite intervention(s) to improve rational use of drugs is the basis of success.

The first step in selecting an intervention is to clearly define the problem to be solved. The behaviors specific to the particular health problem, as well as factors causing variability in performance, need to be identified. It is also important to assess the beliefs and motivation of the prescribers that may contribute to the observed behavior. These assessment may require further studies involving qualitative investigational methods. Once the problem has been defined, a package of interventions can be considered (MSH, 1997 citing Quick et.al,1991). Figure 2.2 and 2.3 describe the general framework for formative and intervention studies and intervention strategies to improve drug use.

Figure 2.2: Framework for Formative and Intervention studies



Source: MSH, 1997 citing Quick et al.,1991, page 480

Table 2.3 : Intervention Strategies to Improve Drug Use

Education Strategies

Training of prescribers

- Formal education (pre-service)
- Continuing education (in-service)
- Supervisory visits
- Group lectures, seminars and workshops

Printed Materials

- Clinical literature and newsletter
- Treatment guidelines and drug formularies
- Illustrated materials (flyers, leaflets)

Approaches Based on Face-to-Face Contact

- Educational outreach
- Patient education
- Influencing opinion leaders

Managerial strategies

Selection, Procurement and Distribution

- Limited procurement list
- Drug utilization reviews and feedback
- Hospital and regional drug committees
- Cost information

Prescribing and Dispensing Approaches

- Structure drug order forms
- Standard diagnostic and treatment guidelines
- Course-of-therapy packaging

Financing

- Price setting
- Capitation-based drug budgeting

Regulatory Startegies

- Drug registration
- Limited drug list
- Prescribing restrictions
- Dispensing restrictions

Source: MSH, 1997, page 466

2.2 Factors Affecting Prescribing Practices

The drug use process involves diagnosis, prescribing, dispensing and adherence to prescribed medications. In general, many interrelated factors influence drug use. The health system, prescriber, dispenser, patient, and community are all involved in the therapeutic process, and all can contribute to irrational use in a variety of ways. The prescriber can be affected by internal and external factors. Internal factors such as inadequate training or lack of continuing education, lack of objective drug information, limited knowledge and personal experience complicate prescribing decisions. The role model who is imitated may not be prescribing rationally. There may be a lack of objective information, and the information provided by drug representatives maybe unreliable. Externally, a heavy patient load and pressure to prescribe from peers, patients and drug company representatives all complicate the prescribing decisions. Finally, profit may affect a prescriber's choice if the prescriber's income is dependent on drug sales (MSH, 1997).

System factors such as un-reliable drug supply system leading to drug shortages, expired drugs, and availability of inappropriate drugs. Such inefficiencies in the system lead to lack of confidence in the system by the prescribers and the patient. The patient demands treatment, and the prescriber feels obliged to give what is available, even if the drug is not the correct one to treat the condition.

The individual's adherence to treatment is influenced by many factors including cultural beliefs, the communication skills of the prescribers and dispensers, the limited time available for consulting, the shortage of printed information and community beliefs about the efficacy of certain drugs or routs of administration. All these complicate the physician's decision-making process as to which type and form of drug to select, how much of it, and for how long it should be prescribed. In the process of medical decision-making, theories are

based on economics, psychological and behavioral sciences. Raisch provided a summary of model for prescribing including persuasion, human inference and cognitive theories (Riewpaiboon, 1998 citing Raisch, 1990). The change of prescribing behavior is not based on a simple mechanism from an input or interventional program to the output of appropriate prescribing. The drug prescribing process in general is affected by many factors; however, it is beyond the scope of this study to illustrate them all under this section.

Some of the factors that may have a significant contribution to the prescribing of drugs and compliance or non-compliance to the guideline in King Chulalongkorn Memorial Hospital can be related to the ones stated here above. One possible contributing factor could be availability of large number of preparations in the market including antibiotics, and combination cough and cold remedies.

In the long run, any country can realize the importance of its drug bill by maintaining an adequate system of drug registration, ensuring that all drugs on the market attain reasonable standards of efficacy, safety, and quality and that information provided with them is reliable. Many of the secondary and short-term cost saving mechanisms which currently prove necessary do so simply because the basic regulatory system does not function properly, e.g. leaving a large number of drugs on the market unevaluated. Investment in an efficient drug regulatory system is thus likely to pay off, provided the prescribing of old and useless remedies is not merely replaced by use of more expensive alternatives (Duke and Ruskamp, 1991).

Among ASEAN countries, Thailand has the largest number of registered pharmaceutical products. By the end of 1993 approximately 30,000 products (about 2000 active ingredients) were registered for use in Thailand. Of the total number of drugs registered, 78.2 % constitute modern drugs while 12.7 % are traditional drugs for human use and the remaining 7.8 % are drugs for veterinary

use. A number of registered drugs are found to be inappropriate and are currently being re-evaluated, e.g. up to 1,977 brands with 36 combinations of ingredients of anti-tussive for pediatric use are available, some have cough suppressants in combination with expectorants. Combination drugs constitute up to 31 % of the total registered drugs. It was noted that in the NEDL only 348 active ingredients are included as necessary for the Thai health service system (Kornkasem et al, 1995).

Table 2.4: Pharmaceutical Profiles of Some Asian Countries

	Indonesia	Myanmar	Nepal	Thailand
Population per physcian	12,500	3,357	22,800	4,180 (1995)
Number of pharmacists	6,245	96	94	10,104 (1995)
Number of pharmacies - Public - Private	4,753 0 4,753	6,265 155 6,110	 4,140 8,732 (dispensaries and drug stores)	18,153 (1995) 0 18,153
Number of registerd pharmaceutical products	15,154	2,810	6,440	32,195 (1995)
Number of drugs on the essential drug list	320 (1994)	80	269 (1997)	372 (1996)
Number of drug importers (public and private)	96	40	1,110	562 (1996)
Number of drug manufacturers Nationals International/foreign	 225 190 35	 55 55 0	 29 0 29	 175 (1995) 149 26
Number of manufacturers of pharmaceutical raw materials	6	0	0	10 (1996)
Fees for drug registration (in US$)	0	300	US$ 3 for domestic products at time of registration	100 (1996)

Source: WHO, Financing Drugs is South-East Asia, 1998, page 18

From Table 2.4, it is apparent that the number of national and international pharmaceutical companies in Thailand are the second highest among the group of countries given as an example. With respect to the number of registered products, Thailand stands first compared to the others.

Pharmaceutical companies spent about 15 % of the drug sales volume to promote their drugs. This included intensive advertisement of drugs. In 1992, they spent approximately 600 million Baht (US$ 24 million) on drug promotion through newspaper, television and radio broadcasting. Sales promotion by drug company representatives is not limited only to these. Generally a figure of more than one billion Baht is believed to have been expended per annum for overall drug promotion including entertaining expenses, commissions on drug purchases, sponsor for symposia, conferences and meetings (Kornkasem et al, 1995). This could be associated with the large number of products available on the market and in turn can be linked with lack of objective drug information resulting in the relatively high percentage of particularly cough and cold preparation prescribing for children with AURI observed at general outpatient pediatric department King Chulalongkorn Memorial Hospital.

On the other hand, educational activities for health professionals and the general public on the rational use of drugs are extremely inadequate with very limited resource support. Inadequate competence of doctors in diagnosis, lack of facilities and resources in health service institutions and limitation of standard treatment lead to irrational drug use as well as adverse reactions especially in regard to antibiotic utilization (Kornkasem et al, 1995). The development of the national guideline for ARI was intended to address some of these problems, but experience has shown that it is not widely distributed and used as a guide for clinical practices.

In view of improving prescribing practices, factors such as status, age, sex, experience, additional training and attitude of doctors in using the national

guideline, availability of too many inappropriate combination drugs in the market and influence of drug company promotion on prescribing decisions in general outpatient pediatric department of King Chulalongkorn Memorial Hospital require further study.

2.3 Standard Treatment Guidelines

Efforts are directed by WHO and other partner organizations in developing standard treatment guidelines for most common diseases and adoption of these guidelines by many countries including Thailand. Improving the rational use of drugs by prescribers, dispensers, and the general public to maximize the potential contribution of pharmaceuticals to preventive and curative health care and ensure the cost-beneficial allocation of resources requires an extensive effort over time. According to the definition of the conference of Experts on Rational Use of Drugs, convened by the WHO in Nairobi in 1985, the rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for adequate period of time, at the lowest cost to them and their community (MSH, 1997 citing WHO, 1985).

Clinical practice guidelines are systematically developed statements to assist practitioners and patient decisions about appropriate health care for specific clinical circumstances (Marlyn et al., 1992). Clinical practice guidelines offer an opportunity for introducing evidence based health care into local practice and for influencing the commissioning of effective health care. The opportunities for guidelines to be influential are currently curtailed by developmental problems, which have only recently been overcome. Overall, guidelines appear to have the potential for making a positive contribution to health care rationing through the better direction of resources and by limiting

inappropriate variation in clinical practice. Evidence-based practice is becoming increasingly common within the health care sector. This is not only because of a search for quality, but also because of economic factors which demand more effective use of resources.

Standard treatment guidelines benefit health officials, supply management staff, health care provider, and patients (Table 2.5). Together with national list of essential drugs, treatment guidelines are powerful tools to promote the rational use of drug. They can also assist in standardization (and rationalization) of prescribing patterns. Treatment guidelines should be used for basic training of health workers, in-service training, supervision, reference, and medical audits. However, sending treatment guidelines to all prescribers alone is not enough to bring about an improvement in prescribing practices. To be effective, they must be properly introduced to prescribers, and their use should be monitored. Treatment guidelines have the strongest long-term impact if they are frequently updated, widely distributed, integrated in the basic curriculum of medical and paramedical teaching institutions, and used for audit (MSH, 1997).

Table 2.5: Potential Benefits of Standard Treatment Guidelines

For Health Officials

- Identification of cost-effective treatment for common health problems;
- Basis to assess and compare quality of care;
- Vehicle for integrating special programs (control of diarrheal disease, acute respiratory infection, tuberculosis, malaria, and so on) at the point of the primary health care provider.

For Supply Management Staff

- Identification of which drug should be available for the most common treated problems;
- Facilitation of pre-packaging of course-of-therapy quantities of commonly prescribed items;
- Drug demand more predictable, so forecasting more reliable;

For Health Care Provider

- Expert consensus on most effective, economical treatment for a specific setting;
- Opportunity for providers to concentrate on correct diagnosis;
- Quality of care standard;
- Basis for monitoring and supervision.

For Patients

- Encouragement of adherence to treatment through consistence among prescribers;
- Most cost-effective treatment are provided;
- Improvement in availability of drugs;
- Better treatment.

Source: MSH, 1997, page 139

The potential benefit of STGs has been well demonstrated in some countries that adherence to treatment guidelines would facilitate rational use of drugs, quality of care and economic savings. For example, according to Dumoulin, Kaddar and Velasquez, (1998), a study done in Ghana demonstrated that the cost of drugs prescribed would have been reduced by 70% if prescriptions given for the four most frequently grounds for consultation had followed the recommendations of the national health authorities.

However, sometimes clinical guidelines are problematic because it is difficult to get people to follow them, effective mechanisms are usually not in place to determine guideline compliance, and the belief that guideline compliance is associated with higher clinical quality or lower cost is usually based on faith rather than data.

New evidence shows that high quality care costs less than poor quality care. High quality care encompasses the elimination of unnecessary or inappropriate services while providing better clinical outcomes, fewer avoidable complications, and greater patient satisfaction. Poor quality care results in adverse outcomes and patient dissatisfaction, both of which can prove costly to a hospital in a competitive market. Development and implementation of an antibiotic policy coupled with effective implementation of clinical guidelines and hospital formulary might contribute for containing antimicrobial resistance, increasing cost of treatment and improvement in quality of care.

Review of literature in this area generally indicated that there was no study done in King Chulalongkorn Memorial Hospital to assess the treatment variations or non-compliance with the guidelines for the management of AURI in children and to estimate the associated cost of variations. Thus this study is believed to bridge the gap observed in these areas.