REPORT

CAN DRUG UTILIZATION HELP IN PROMOTING THE MORE RATIONAL USE OF MEDICINE? EXPERIENCES FROM WESTERN NEPAL

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ABSTRACT
Drug utilization research describes the extent, nature and determinants of drug use in populations and aims to facilitate the more rational use of medicines. The departments of Pharmacology and Clinical Pharmacy at the Manipal College of Medical Sciences, Pokhara, Nepal are committed to promoting the more rational use of medicines. The departments run a Drug Information Center and a Pharmacovigilance Center in the teaching hospital. Over the last eight years, the departments have conducted drug utilization studies in the teaching hospital and the community. A few of these were of the intervention type and drug use was studied before and after the intervention.
Members of the departments are on the hospital Drug and Therapeutics Committee. Educational initiatives to improve prescribing have been carried out in a few instances. Restricting the number of brands in the hospital pharmacy and creation of a hospital drug list has been carried out. The impact of these initiatives has been studied only in a few cases. Generic prescribing was found to be low. The educational initiatives to improve prescribing had only limited success.
The hospital is in the process of framing antimicrobial use guidelines for various departments. A hospital formulary is under preparation. The influence of drug utilization studies on the prescribing patterns has been low to moderate. The department of Clinical Pharmacy runs a Medication Counseling Center in the hospital and teaches appropriate use of medicines to patients. The studies and initiatives to promote the more rational use of medicines should be continued and strengthened.

Keywords: Drug utilization, educational interventions, pharmacoepidemiology, rational use of medicines.

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Rational use of medicines (RUM) implies the use of the lowest possible number of drugs to obtain the best possible effect in the shortest period and at a reasonable cost (Gross F, 1981). Drug utilization research has been defined by the World Health Organization (WHO) as 'the marketing, distribution, prescription, and use of drugs in a society with special emphasis on the resulting medical, social and economic consequences' (World Health Organization).

Pharmacoepidemiology applies epidemiological methods to studies of the clinical use of drugs in populations (World Health Organization, 2003). Drug utilization research (DUR) can be divided into descriptive and analytical studies. DUR describes the extent, nature and determinants of drug exposure and aims to facilitate the rational use of drugs in populations.

The departments of pharmacology and clinical pharmacy at MCOMS

The departments of Pharmacology and of Clinical Pharmacy at the Manipal College of Medical Sciences (MCOMS), Pokhara, Nepal are committed to promoting the more rational use of medicines. The departments run a Drug Information Center (DIC) and a Pharmacovigilance Center in the teaching hospital. The departments have conducted a number of drug utilization studies to obtain baseline data on the use of medicines. In this article, the authors attempt to describe the various drug utilization studies carried out by the department and their impact on prescribing patterns, if any.

A limitation of these studies is that a uniform pattern was not followed while carrying out the studies. Partly this was because the studies were carried at differing locations, the drugs being studied were different and the methods of data collection were different. In certain studies, the defined daily dose (DDD) was used to quantify drug use while in others it was not done. We are describing the studies in a chronological order with the oldest study which was done being described first.

Prescribing trends among patients in the manipal teaching hospital

Prescribing trends among patients attending the Manipal Teaching Hospital (MTH) was studied during the time period from August 1999 to May 2000 (Sarkar and Das, 2002). This was the first DUR carried out by the department of Pharmacology. This study also showed an inclination to prescribing by brand names. Fixed-dose combinations (FDCs) were commonly prescribed and the percentage of drugs prescribed from the Essential drug lists was low. No intervention was however, carried out using the findings of the study.

Use of antimicrobials in MTH

Following the first study, the authors decided to look at the pattern of use of antimicrobials, a commonly used therapeutic category in detail. The use of antimicrobial agents in MTH was studied during the time period from August 1999 to July 2000 (Sarkar and Das, 2003). Nearly 34% of the prescriptions contained antimicrobials and only 18% of antimicrobials were prescribed by generic name. No intervention was carried out using the data. The use of culture and sensitivity data to guide prescribing was low. In cooperation with the department of Microbiology, the departments of Pharmacology and Clinical Pharmacy disseminate information on the sensitivity pattern of common microorganism. This will be discussed later.

Prescribing patterns in medical outpatients

Prescribing practices in medical outpatients was audited during July 2001 (Shankar *et al*., 2002 b). The medicine outpatient department (OPD) has the maximum outpatient load in the hospital. Many patient are referred to other departments from the Medicine OPD. The percentage of drugs prescribed by brand name was high. A discussion was held with the consultants of the department of Medicine and the importance of prescribing by generic name was stressed. The head of the department sent a written communication asking all consultants, medical officers and interns in the department to prescribe by generic name. The impact of this intervention was however, not assessed. Studies were carried out on prescribing patterns among outpatients at later time periods also.

Drug utilization in the psychiatry outpatient department

The psychiatry consultant wanted the morbidity pattern and the drug use in his department to be studied. We were also interested in studying the utilization of psychiatric medicines. The study was conducted in 2001 to study patterns of prescription and drug use in the psychiatry out-patient department of the Manipal Teaching hospital (MTH), Pokhara, Nepal. High frequency of prescribing by brand names was noted and female patients were prescribed more antidepressants (Shankar and Roy, 2002). The results were communicated to the department but were not successful in changing prescribing behaviour.

Self-medication practices in the Pokhara valley

Self-medication is the most common form of treatment choice and people often rely on informal distribution channels for medicines (Hardon *et al*., 2004). Self-medication and non-doctor prescription practices in the Pokhara valley were studied during the year 2001 (Shankar *et al*., 2002 a). Self-medication was seen to be common. Mild illness, previous experience of treating a similar illness and non-availability of health personnel were the reasons commonly given for self-medication. Non-doctor prescribing was also common. Herbal remedies were commonly used. The study gave information on the use of medicines by consumers in the Pokhara valley. However, no intervention was carried out using this data.

Drug use in dentistry and in obstetrics and gynecology

An audit of prescribing practices of dentists (Sarkar C *et al*., 2004a) and of analgesic use in dentistry (Sarkar C *et al*., 2003b) revealed lacunae in prescribing. The studies emphasized the need for the development of prescribing guidelines and educational initiatives to encourage the rational use of medicines (RUM). However, no interventions were carried out. A study of drug use during pregnancy was carried out in the obstetrics out-patient department of MTH (Das B *et al*, 2003). In most cases, the selection of drugs was rational. However, some anomalies were observed and these were discussed with the clinicians. The impact of this discussion on prescribing patterns, if any, was however, not studied. Many of these studies were carried out by our colleagues, Dr. Sarkar and Dr. Das and they planned to carry out follow up studies. However, they left the institution soon after.

Drug use patterns in Western Nepal

As already detailed self-treatment of common illness by lay people is common in developing countries (Saradamma *et al*., 2000). After studying self-medication, we planned to study both prescription and non-prescription drug use in the community. A study carried out in Pokhara city and a neighbouring village found the use of allopathic and complementary medicines was common (Shankar *et al*., 2003b). In South Asia, complementary medicine is the older treatment modality on which modern allopathic medicine has been superposed. Complementary medicine use was more common among older respondents. Self-medication was more among rural households. The department of Community Medicine conducts family study modules during the fifth and sixth semester. In association with the department of Community Medicine, the Pharmacology department is in the process of starting a program where students can study drug use at a family level and can educate families in the appropriate use of medicines during their family visits.

Antimicrobial use in the Intensive Treatment Unit

The Intensive Treatment Unit (ITU) is an area where a large number of medications are prescribed (Bordeen and Butt W, 1992) and there is an increased likelihood of occurrence of medication errors. This was in our mind when we designed the study to investigate the use of antimicrobials in the ITU. The prescribing pattern of antimicrobials in the ITU was studied in the Manipal Teaching hospital (Shankar *et al*., 2003c). About half the patients received an antimicrobial and more than 84% of antimicrobials were used without bacteriologic evidence of infection. The use was irrational in 39 of the 149 patients. The results were discussed with the department of Medicine which manages the ITU. We are in the process of framing antimicrobial use guidelines for the various hospital departments and especially for the ITU. The department of Microbiology maintains data on the antibiotic sensitivity patterns of microorganisms isolated in the hospital and this data is used in the process of formulating guidelines. The resources of the DIC are also used for this purpose.

Antibiotics in the Internal Medicine ward

A study of antibiotics prescribed in the Internal Medicine wards was carried out from 1st April to 30th June 2002 (Shankar *et al*., 2003a). Two hundred and three of the 687 patients admitted were prescribed antibiotics. The use of antibiotics in chronic obstructive pulmonary disease (COPD) and lower respiratory tract infections (LRTI) was common. Antibiotic resistance was observed to be a problem. The combination of ampicillin and cloxacillin was prescribed in a large number of cases. Based on information from this and other studies the hospital drug and therapeutics committee banned the FDC of ampicillin and cloxacillin. We have discussed this later. This was the first study where we used the defined daily dose (DDD) as a unit of drug consumption. Based on the results, a hospital infection control committee was formed. The committee had framed guidelines for sterilization of equipment and guidelines for sterilization of the operation theatres and other areas. However, further progress was sporadic.

Prescribing pattern in a sub-health post

The sub-health post (SHP) is often the first level of contact of the rural population with the healthcare system in Nepal. This was the first study conducted by our department in a primary health care set up and we chose the first level of contact, the SHP. A study was carried out over a three-month period at the Hemja SHP in Kaski district of Western Nepal (Shankar *et al*., 2004c). Hemja is a village near Pokhara city, Western Nepal. The majority of the prescriptions contained 2 or 3 drugs. The mean cost of drugs per prescription was 0.24 US$. Only 10 of the 728 prescriptions (1.4%) were irrational. The defined daily dose (DDD) per 1000 inhabitants per day was used to measure drug consumption. The study had recommended training programmes for the SHP staff. However, this could not be carried out. The department of Community Medicine conducts training programmes for various institutions. The possibility of conducting a training programme in association with the department of Community Medicine can be explored.

Antimicrobial use in dermatology

Antimicrobials are commonly prescribed in Dermatology. A previous study had shown anomalies in the use of antimicrobials in the dermatology OPD (Sarkar *et al*., 2002). An educational intervention was carried out in the department of dermatology following a pre-intervention study (Shankar *et al*., 2004 a). The staff of the department of Pharmacology discussed the anomalies observed and the importance of rational prescribing with the

dermatologists. After the initial session two follow up educational sessions were conducted. A post-intervention study was carried out. It was observed that the average number of antimicrobials prescribed was reduced. A greater percentage of drugs were prescribed from the Essential drug list of Nepal following the intervention Shankar *et al*., 2004b). There was a marginal increase in generic prescribing and a greater percentage of prescriptions had the dosage, strength and duration of treatment specified. This was the first intervention study we carried out and it was only successful to a limited extent.

Cephalosporin utilization

Cephalosporins are a commonly used group of antibiotics in hospitals and healthcare facilities the world over (Sharma *et al*, 1998; Gould *et al*., 2000). Utilization of cephalosporins was studied during a four-month period (1st November 2003 to 29th February 2004) in the inpatients wards of the hospital (Shankar *et al*., 2005a). Around 2.5% of the inpatients were prescribed a cephalosporin. The use of cephalosporins for prophylaxis and for non-bacteriologically proven infections was high. The mean cost of drugs was 34.8 US$. The cephalosporin utilization was 4.6 DDDs/100 bed-days. Third generation cephalosporins were most commonly used (Shankar *et al*., 2005a). The use of cephalosporins was low and this has to be encouraged. Later the use of fluoroquinolones was also studied. This was our effort to look at the utilization of two commonly used groups of antimicrobials.

Drug utilization in the Intensive Care unit

The ITU of the hospital was upgraded to an Intensive Care Unit (ICU) and the drug utilization pattern in the ICU was studied over a four-month period in 2002 (Shankar *et al*., 2005b) The mean number of drugs prescribed was high. An average of 25.1 US$ was spent on medicines. The total consumption of drugs was 356.4 DDDs/100 bed-days and of intravenous fluids were 25.8 liters/100 bed-days (Shankar *et al*., 2005b).

Prescribing patterns among paediatric inpatients:

A study during the time period from December 1, 2003 to March 31, 2004 was carried out to assess the prescribing patterns among paediatric inpatients (Shankar *et al*., 2006). The study found that prescribing by generic name was low and the use of parenteral antibiotics was high. The use of antibiotics in predominantly viral infections was also observed. The results were presented to the drug and therapeutics committee (DTC) and the antimicrobial subcommittee of the DTC is in the process of framing guidelines for the use of antimicrobials in various departments. A consensus based approach to framing these guidelines is being tried to ensure a feeling of ownership of these guidelines among the users.

Prescribing patterns among outpatients

The undergraduate medical students of our institution had studied the morbidity profile and prescribing patterns among outpatients attending the teaching hospital (Lamicchane *et al*., 2006). It was found that generic prescribing and the use of essential drugs was low. A few of the drug combinations being used were irrational. The findings were brought to the notice of the hospital DTC. The study served to reemphasize the concept of rational prescribing. The World Health Organization (WHO)/ International Network for the Rational Use of Drugs (INRUD) indicators are taught to the students during the pharmacology practical sessions and the study gave the students an opportunity to apply these indicators in a field setting. We hope this study has helped to create a capacity for self audit among the students. The department had also studied fluoroquinolone utilization in the hospital (Shankar *et al*., 2007).

Rational drug prescribing and dispensing in outpatients

A study on drug prescribing and dispensing among outpatients was carried out from June 10th to August 19th 2004 at the outpatient pharmacy of the hospital (Alam *et al*., 2006). This was mainly an initiative of the department of hospital pharmacy. In addition to drug utilization they also planned to obtain data on the quality of drug dispensing. Prescribing by generic names continued to be low. Only 40% of the drugs were prescribed from the Essential drug list of Nepal. No significant improvement in prescribing indicators was noted compared to previous studies. As regards dispensing the medication envelopes were labeled with the name of the drug and the drug strength in more than 80% of the cases. However, only 0.4% of the envelopes had the name of the patient. This anomaly was brought to the notice of the hospital pharmacists during the Continuing Pharmacy Education (CPE) programmes.

Drug utilization studies and the rational use of medicines

What have the drug utilization studies achieved? These studies have been carried out for over eight years in our institution. The studies have provided data on the utilization pattern of drugs in our institution and to a limited extent in the community. Due to manpower limitations, technical problems and other commitments we have not been able to follow up on some interesting results and also to study the drug utilization in the hospital as a whole. Many departments have not been studied. The department has set up a Drug Information Center (DIC) in the teaching hospital. The formation of the hospital DTC was an important step towards promoting rational use of medicines. The DTC has tried a number of educational initiatives to encourage generic prescribing. We are trying to enforce a managerial intervention to encourage generic prescribing. In the Patan hospital, Kathmandu, Nepal a structured prescription order form has been used (World Health Organization, 2003). The drugs are written using generic names and the prescriber has to just tick the selected drugs and fill in the dose and the duration. This can be tried in our institution.

The utilization of medicines in Ophthalmology and Otorhinolaryngology has not been studied. Data on these departments are required.

Role of the hospital drug and therapeutics committee

The Drug and Therapeutics Committee (DTC) was formed in 2004 in the hospital. To frame guidelines for antimicrobial use an Antimicrobial subcommittee was formed. The DTC has carried out a number of interventions to improve drug use in the hospital. Restricting the number of brands, banning of irrational drug combinations like ampicillin and cloxacillin and withdrawal of phenylpropranolamine have been carried out (Palaian *et al*., 2005). The department publishes a quarterly Drug Information Bulletin and the sensitivity patterns of common microorganisms (antibiograms) are published in the bulletin to guide therapy. A Pharmacovigilance Bulletin called Vigil is published as a two page pullout along with the Drug Information Bulletin.

Hospital drug list

The process of creating a hospital formulary is underway using the resources of the DIC. A hospital drug list has been created and the DTC uses evidence-based guidelines to decide on the addition or deletion of drugs from the hospital drug list.

Clinical meetings

Recently the department has started presenting the findings of drug utilization studies at the weekly clinical meetings which are attended by consultants from various clinical departments and medical students in the final year of their course. Interns and medical officers also attend the clinical meetings.

Ward rounds

Members of the department of Clinical Pharmacy attend ward rounds in the Surgery department. After initial resistance, the surgeons had welcomed the contribution of the pharmacists. Issues like excessive use of ampicillin and clavulanic acid and choice and duration of use of antibiotics for prophylaxis were discussed during the rounds. The use of the FDC has decreased and use of single dose pre-operative antibiotics for prophylaxis is becoming more common.

Antimicrobial use guidelines and other issues

We are framing antimicrobial use guidelines and once it has been successful the creation of Standard Treatment Guidelines can be considered. The turnover of clinicians is a factor hindering rational use of medicines as we have to sensitize the newly appointed clinicians regarding RUM. We are conducting studies to assess the impact of the various interventions carried out. Preliminary analysis shows that polypharmacy has reduced. However, prescribing by generic name is low and use of antimicrobials continues to be inappropriate in many cases.

The road ahead

The formulation of a hospital formulary and antimicrobial use guidelines may be achieved in the near future. The DTC has been active in promoting the more rational use of medicines Mishra *et al*., 2006). The departmental CPE programmes should be continued and strengthened. The department through the DTC is already exercising control over drug procurement. Structured drug order forms and automatic stop orders are things to be considered. There is a lack of a hospital policy on pharmaceutical promotion. Formulation of standard treatment guidelines for the hospital should be taken up in earnest. This will also enable us to assess rationality of prescribing and adherence to guidelines while carrying out the drug utilization studies.

At a community level, education of consumers is a key intervention to promote the more rational use of medicines. The pharmacy is an important source of medicines for most consumers. In many cases the drugs are obtained from the drug retailer without consulting a prescriber. Training of drug retailers has been shown to improve the use of medicines (Kafle *et al*., 1992). Standard treatment guidelines have been formulated for SHPs in Nepal. In the Chitwan district, training of prescribers and adherence to STGs were shown to be successful in improving the use of medicines (Kafle, 2001). We are planning to include study of drug use by families and education about rational use of medicines during the family study modules in Community Medicine.

CONCLUSION

Despite the non uniformity in procedure and the methods of data collection, the drug utilization studies have provided information about drug use patterns in the teaching hospital and to a more limited extent in the community. The impact of these studies on the prescribing patterns has not been high. A closer liaison of the departments with the hospital Drug and Therapeutics Committee should be considered. Educational interventions to improve drug use should be encouraged and managerial interventions can be considered. The Drug Information Center can play an important role in promoting the more rational use of medicines.

REFERENCES

Alam K, Mishra P and Prabhu M *et al* (2006). A study on rational drug prescribing and dispensing in outpatients in a tertiary care teaching hospital of Western Nepal. *Kathmandu Univ. Med. J*., **4**: 436-43.

Bordeen LA, Butt W (1992). Drug errors in intensive care. *J. Paediat.r Child Health,* **28**: 309-11.

Das B, Sarkar C, Datta A and Bohra S (2003). A study of drug use during pregnancy in a teaching hospital in western Nepal. *Pharmacoepidemiol. Drug Saf.,* **12**: 221-5.

Gould IM and Jappy B (2000). Trends in hospital antimicrobial prescribing after 9 years of stewardship. *J. Antimicrob. Chemother.,* **45**: 913-7.

Gross F (1981). Drug utilization theory and practice. The present situation in federal Republic of Germany. *Eur. J. Clin. Pharmacol.,***19**: 387-94.

Hardon A, Hodgkin C and Fresle D (2004). How to investigate the use of medicines by consumers. World Health Organization & University of Amsterdam Switzerland WHO/EDM/PAR/2004.2.

Kafle KK (2001). Test of strategies for implementing STS in improving use of drugs. http://www.inrud-nepal.org.np/publications/STS-%20Test%20of%20strategiest.pdf. Accessed on Jan. 5th, 2007.

Kafle KK, Gartoulla RP, Pradhan YM, Shrestha AD, Karkee SB and Quick JD (1992). Drug retailer training: Experiences from Nepal. *Soc. Sci. Med.,* **35**: 1015-25.

Lamichhane DC, Giri BR, Pathak OK, Panta OB and Shankar PR (2006). Morbidity profile and prescribing patterns among outpatients in a teaching hospital in Western Nepal. *McGill J. Med.,* **9**: 126-33.

Mishra P, Alurkar VM and Subish P (2006). Functions of a drug and therapeutics committee in Nepal. *J. Pharm. Pract. Res.*, **31**: 81

Palaian S and Mishra P (2005). Role of drug and therapeutics committee towards drug safety-experiences from Western Nepal. *Kathmandu Univ. Med. J.*, **3**: 79-80.

Saradamma RD, Higginbotham N and Nichter M (2000). Social factors influencing the acquisition of antibiotics without prescription in Kerala state, south India. *Soc. Sci. Med.*, **50**: 891-903.

Sarkar C and Das B (2002). Prescribing trends in a teaching hospital in Western Nepal. *Journal of Nepalgunj Medical College,* **2**: 4-7.

Sarkar C and Das B (2003). Prescribing trends and use of antimicrobial agents in a tertiary hospital in Western Nepal. *Journal of Nepalgunj Medical College,* **3**: 6-9.

Sarkar C, Das B, Baral P (2004a). An audit of drug prescribing practices of dentists. *Indian J. Dent. Res.,* **15**: 58-61.

Sarkar C, Das B, Baral P (2004b). Analgesic use in dentistry in a tertiary hospital in Western Nepal. *Pharmacoepidemiol Drug Saf.*, **13**: 729-33.

Sarkar C, Das B, Sripathi H (2002). Antimicrobial use in dermatology in a teaching hospital in western Nepal. *Int. J. Clin. Pract.*, **56**: 258-60.

Shankar P, Partha P and Shenoy N (2002a). Self-medication and non-doctor prescription practices in Pokhara valley, Western Nepal: a questionnaire-based study. *BMC Fam Pract.*, **3**: 17.

Shankar PR, Handattu S, Upadhyay D and Dubey AK (2004b). Effect of an educational intervention on antimicrobial use patterns in the Dermatology out-patient department. *Journal of the Institute of Medicine,* **26**: 14-18.

Shankar PR, Kumar P, Rana MS, Partha P, Upadhayay DK and Dubey AK (2004a). Morbidity profile and drug utilization in a sub-health post in Western Nepal. *Calicut. Med .J.*, b; **2**(4): e4.

Shankar PR, Kumar P, Theodore AM, Partha P and Shenoy N (2003b). A survey of drug use patterns in Western Nepal. *Singapore Med. J.*, **44**: 352-6.

Shankar PR, Partha P, Dubey AK, Mishra P and Deshpande VY (2005b). Intensive care unit drug utilization in a teaching hospital in Nepal. *Kathmandu Univ Med. J.,* **3**: 130-7.

Shankar PR, Partha P and Nagesh S (2002b). Prescribing patterns in medical outpatients. *Int. J. Clin. Pract.*, **56**: 549-51.

Shankar PR, Partha P, Shenoy N and Brahmadathan KN (2003c). Investigation of antimicrobial use pattern in the intensive treatment unit of a teaching hospital in western Nepal. *Am. J. Infect. Control,* **31**: 410-4.

Shankar PR, Partha P, Shenoy NK, Easow JM, Brahmadathan KN (2003a). Prescribing patterns of antibiotics and sensitivity patterns of common microorganisms in the Internal medicine ward of a teaching hospital in Western Nepal: a prospective study. *Ann. Clin. Microbiol. Antimicrob.,* **2**: 7.

Shankar PR, Roy S (2002). Patterns of prescription and drug use in a psychiatry out-patient department in a teaching hospital in Western Nepal. *The Internet Journal of Pharmacology,* **1**(2)

Shankar PR, Subish P, Upadhyay DK, Dubey AK, Deshpande VY (2005a). Cephalosporin utilization in the inpatient wards of a teaching hospital in Western Nepal. *Pharmacoepidemiol Drug Saf.,* **14**: 507-8.

Shankar PR, Subish P, Upadhyay DK, Dubey AK, Mishra P and Saha AC (2007) Fluoroquinolone utilization among inpatients in a teaching hospital in Western Nepal. *J. Pak. Med. Assoc.,* **57**: 78-82.

Shankar PR, Upadhyay DK, Subish P, Dubey AK and Mishra P (2006). Prescribing patterns among paediatric inpatients in a teaching hospital in Western Nepal. *Singapore Med. J.*, **47**: 261-5.

Sharma D, Reeta K, Badyal DK, Garg SK and Bhargava VK (1998). Antimicrobial prescribing pattern in an Indian tertiary hospital. *Indian J. Physiol. Pharmacol.,* **42**: 533-7.

World Health Organization (2003a). Introduction to drug utilization research. Norway.

World Health Organization (2003b). Chapter 7. Promoting the rational use of medicines. *In*: Holloway K, Green T. Drug and Therapeutics Committee: A practical guide. World Health Organization and Management Sciences for Health.