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TOPIC:

RATIONAL DRUG PRESCRIBING OF PROVIDERS OF THE MUTUAL DISTRICT HEALTH INSURANCE OF LAWRA DISTRICT

BY

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THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF PUBLIC HEALTH DEGREE

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DECLARATION

I declare that except for references of other peoples' investigations which have been duly acknowledged, this dissertation is the result of my own research undertaken under supervision and that this dissertation either in whole or in part has not been for another degree elsewhere.

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DEDICATION

This work is dedicated to my family especially my wife Stella Tellunaya and my son Kelvin Amesiya.

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My greatest appreciation is rendered unto the almighty God for seeing me successfully through the MPH course and this dissertation. Secondly, I would like to thank my academic supervisor Dr. Reuben Esena of the Department of Health Policy Planning and Management. I am also indebted to Dr. Patricia Ackweongo also of the Department of Health Policy Planning and Management whose support made this dissertation a success. I am equally grateful to my field supervisor Dr. Sabastian Sandaare and the entire Lawra District Health staff for their enormous support.

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ABSTRACT

Rational use of drugs is one of the major priority issues in health systems worldwide. Analysing prescriptions is fundamental to evaluating rational use of drugs in health facilities. Irrational prescribing in Lawra district is a concern to health care delivery (DDHS personal communication, 2009). Some of the reasons identified include: Inadequate personnel and middle to low level staff such as community health officers, nurses and medical assistants are the main prescribers (DDHS Personal communication, 2010).

This project was undertaken to analyse drug prescribing practices in health facilities in Lawra district and the reasons associated. A cross-sectional study using quantitative and qualitative methods were used to evaluate 300 prescriptions by a systematic random selection from all public health facilities in Lawra |district from September to December 2009. Additionally, 12 providers and 10 facility managers were purposively selected and interviewed. Analysis followed WHO recommended core indicators.

The mean number of drugs prescribed at each encounter was 3.2. The results showed that 87% drugs were prescribed by generic name, 94% of drugs prescribed were from EDL. The percentage of encounters with prescriptions containing antibiotics and injections were 40% and 26% respectively.

The prescribing pattern in health facilities in Lawra district was associated with polypharmacy, over prescribing of antibiotics and injections, however, there is high prescription of drugs by generic names.

Keywords: Rational use of drugs, Lawra, polypharmacy, generic, injections, antibiotics and EDL.

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Table of Contents

DECLARATION ii
DEDICATION iii
ACKNOWLEDGEMENT iv
ABSTRACT v
LIST OF TABLES ix
LIST OF FIGURES x
LIST OF ACRONYMS xi
CHAPTER ONE 1
1.0 INTRODUCTION 1
1.1 Problem statement 3
1.2 Conceptual framework 4
1.3 Justification 6
1.4 STUDY OBJECTIVES 7
1.5 Research questions 8
CHAPTER TWO 9
2.0 LITERATURE REVIEW 9
2.1 Introduction 9
2.2 Public health importance of rational prescribing 9
2.3 Drug prescribing in developed countries 10
2.4 Drug prescribing in developing countries 11
2.5 Drug use Indicators 12
2.6 Improving use of drugs 13
2.7 Managerial approaches to rational drug prescribing 15
2.8 Measuring drug use 16
2.9 Health Systems and its Building Blocks 18
CHAPTER THREE 21
3.0 METHODOLOGY 21
3.1 Introduction 21
3.2 Study design 21
3.3 Study area 21
3.4 Health service organisation 23
3.5 Variables 25
3.6 Study Population 25

University of Ghana http://ugspace.ug.edu.gh

3.7 Sampling 25
3.8 Sample size 25
3.9 Tools 26
3.10 Protocol for selecting respondents 26
3.11 Data processing and analysis 28
3.12 Statistical methods 28
3.13 Limitations of the study 28
3.14 Ethical issues 29
3.15 Pre-test 29
CHAPTER FOUR 31
4.0 RESULTS 31
4.1 Facility characteristics. 31
4.2 Provider Characteristics 31
4.4 Drugs Use Patterns 32
4.5 Factors affecting prescribing patterns of providers 35
4.6 Experience and technical skills of providers 37
4.7 Categories of staff prescribing 38
4.8 Availability of essential drugs 39
CHAPTER FIVE 40
5.0 DISCUSSION 40
5.1 Mean number of drugs prescribed as an indicator of rational prescribing 40
5.2 Generic drug prescribing as an indicator of rational prescribing 41
5.3 Prescribing antibiotics as an indicator of rational prescribing 41
5.4 Prescribing injections as an indicator of rational prescribing 42
CHAPTER SIX 44
6.0 Conclusion 44
6.1 Recommendation 44
REFERENCES 45
APPENDICES 53

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LIST OF TABLES

Table 1: Drug Use Patterns.....33

Table 2: Drug use indicators of various health facilities in Lawra district……..34

Table 3: Categories of prescribers……39

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LIST OF FIGURES

Figure 1: Conceptual Framework……...4

Figure 2: Map of Upper West Region showing Lawra……22

Figure 3: Factors that influence providers to prescribe number of drugs……35

Figure 4: Factors influencing Providers Prescription……...36

Figure5: Pattern of prescribing injections……37

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LIST OF ACRONYMS

ANPE- Average Number of Prescriptions per Encounter

CHPS- Community-Based Planning and Services

DTC-Drug and Therapeutic Committee

EAHP- European Association of Hospital Pharmacists

EDL-Essential Drug List

IDI- In-depth- Interview

INJ- Injection

INRUD- International Network of Rational Use of Drugs

OPD- Out Patient Department

PAE- Percentage of Antibiotics Prescribed

RDU- Rational Drug Use

STG-Standard Treatment Guidelines

WHA-World Health Assembly

WHO- World Health Organization

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CHAPTER ONE

1.0 INTRODUCTION

Rational prescribing implies using the right drug for the right patient at the right time in the right dose and manner of administration, at affordable cost and with right information (Akhtar, 2009). Medically inappropriate, ineffective and economically inefficient use of pharmaceuticals is commonly observed in health care systems throughout the world, especially in developing countries (INRUD, 2004).

In developing countries, this problem is compounded by low budgetary allocation to the health care sector with drugs representing a chunk of this expenditure. Despite this, inappropriate and irrational drug use is still high. The adoption of Essential Drug List (EDL), prescribing the drugs according to standard guidelines will lead to improved rational prescribing. Although about 67% of the population worldwide have access to essential medicine 50% of all medicines are prescribed inappropriately (WHO, 2002). In Africa, only, 40% of all patients are treated in accordance with clinical guidelines (INRUD, 2004). A prescription has to be tailor-made for an individual patient and should take into account the diagnosis, age, sex, weight, drug and food interactions, vital functions as well as socio-economic factors of patients. (Akhtar, 2009).

Essential drugs program was introduced in Ghana through the Ghana National Drug programme (GNDP) in 1997 and its goal was to ensure that all people in Ghana have access to effective, safe and affordable medicines of good quality in both public and private sectors and that the medicines are used rationally (Ofori-Adjei *et al*; 2000). Expenditures due to irrational use of drugs have been a strain on the meagre health budgets of several developing countries. Despite the Essential drug program in countries, there is some evidence of poor prescribing habits, including irrational use of drugs, high numbers of drugs per prescription

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and high use of injectable formulations and antibiotics by physicians (Cheraghali *et al*; 2004). Although the World Health Organisation (WHO) and Ghana Health Service (GHS) recommend that an ideal prescription should contain 1.4-1.7 drugs prescribed per encounter (Walker *et al*; 1990), but surveys conducted by the Ghana national drug programme showed that the number of drugs per patient contact at public health facilities in Ghana as 3.7 (GNDP, 2004). In line with this, the Ghana Health Service published and circulated Essential Drugs list and Standard treatment Guidelines to health centres and hospitals to promote rational prescribing (GHS, 2000).

Furthermore, it is known that various forms of inappropriate prescribing often remain unnoticed by those involved in health sector decision making or delivery of health services. The aim of this study therefore is to describe the prescribing patterns of providers in Lawra district and identify possible contributory factors to inappropriate prescribing to assist policy makers in decision making in the district.

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1.1 Problem statement

The problems associated with drug prescribing are not limited to medical doctors. Huge demands for primary health care have resulted in role substitution, with professionals other than medical doctors and medical assistants doing most of the diagnoses and treatment (WHO, 2001). Lawra district faces many problems as a typical rural area in a developing country, Ghana where the health care sector is beset with difficulties such as low availability of service units, lack of medical officers to prescribe for the growing number of patients since 2005 when health insurance was introduced. The district has two hospitals and eight health centers. Each health centre serves about 4,000 people and the hospitals serve 60,000-100,000 people (Lawra DHMT, 2009). Due to inadequate personnel, and the fact that the middle to low level staff such as community health officers, nurses and medical assistants represent the main crop of prescribers, irrational prescribing is a problem in the district (DDHS personal communication, 2010). Evidence of irrational prescribing in the district is a major cause for concern (Lawra DHMT, 2009). Irrational use of drugs leads to waste of resources and significant patient harm in terms of poor patient outcomes, adverse drug reactions, increased antimicrobial resistance and the transmission of hepatitis, HIV/AIDS and other blood-borne diseases (WHO, 2002).

It is therefore important to assess the prescribing pattern in the district as a guide to inform decision by policy makers.

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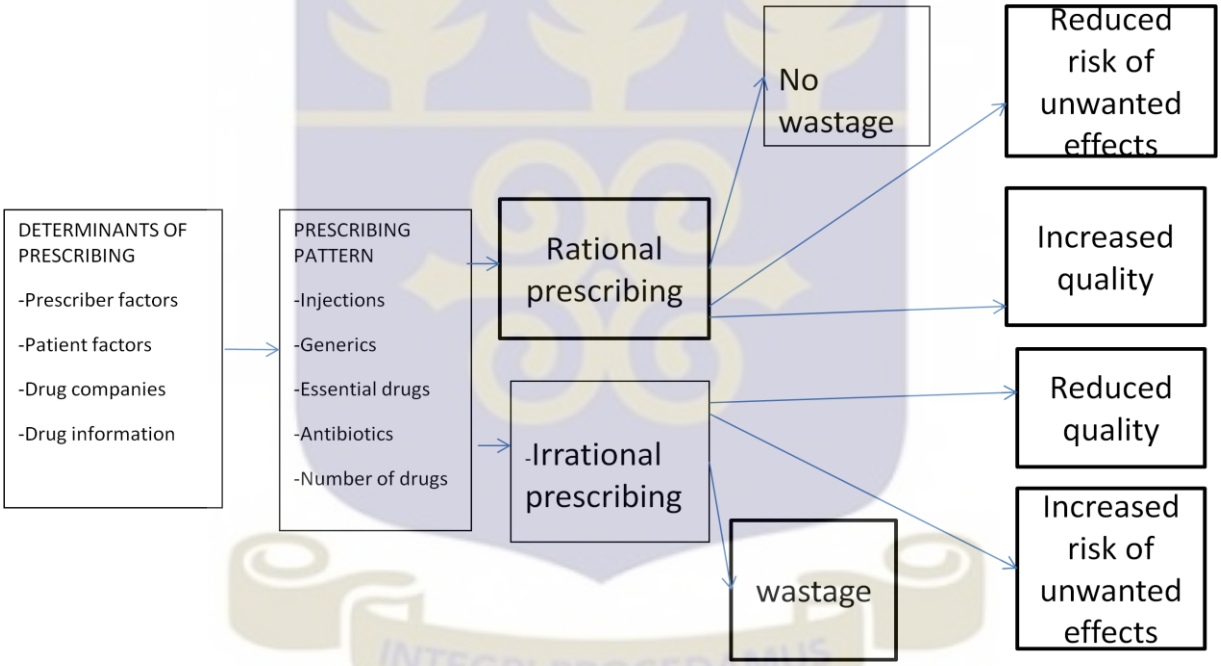
1.2 Conceptual framework

Factors that influence irrational use of drugs are prescribers, patients, the drug supply system including industrial influences, government regulation, drug information and misinformation (Zelmer, 1992). The conceptual framework is represented in figure 1.

Figure 1: Conceptual framework of rational drug use



Lack of proper clinical training regarding writing a prescription, dependency on diagnostic aid, rather than clinical diagnosis, is increasing day by day in many prescribers. Providers give less time to patients, not explaining some basic information about the use of drugs. Correct diagnosis is an important step toward rational drug therapy. Providers posted to remote areas like Lawra have to face a lot of difficulty in precise diagnosis due to lack of diagnostic facilities. To satisfy patient expectations and demand of quick relief, clinician

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prescribe drug for every single complaint. Also, there is a belief that "every illness has a pill" All these increase the tendency of over prescribing. Absence of well organized drug regulatory authority and presence of large number of drugs in the market leads to irrational use of drugs. The lucrative promotional programmes of the various pharmaceutical industries influence drug prescribing. The availability of unbiased drug information and the requisite skills to interpret affects rational prescribing.

Prescribing patterns are either rational or irrational depending on the determinants of prescribing. The pattern could be rational as in the case of reduced injections, prescribing mainly generic drugs, prescribing within the essential drug list and using antibiotics as and when they are indicated. Irrational prescription however, involves high use of injections, prescribing mainly branded drugs and drugs outside the essential drug list and the indiscriminate use of antibiotics. Furthermore, in rational prescription, no wastage of resources are common, there is reduced risk of unwanted effects such as adverse drug reactions and bacterial resistance. Irrational prescription however is associated with wastage of resources, increased unwanted effects such as adverse drug reactions and bacterial resistance which eventually reduces the quality of care.

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1.3 Justification

Irrational over-use of medicines can stimulate inappropriate patient demand, lead to reduced access and attendance rates and loss of patient confidence in the health system (WHO, 2002). In an attempt to address this problem, standard treatment guidelines and essential drug list are widely circulated in public health facilities in Ghana (GNDP, 2004) to ensure rational prescribing but these documents are not properly adhered, due to inability to identify factors affecting the patients prescribing in the study areas lack of enforcement.

Findings from this study will sensitize the district health administration with some information that can help in further review and implementation of policies related to rational drug prescribing in the district.

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1.4 STUDY OBJECTIVES

1.4.1 General objective:

The general objective of the study is to describe the prescribing patterns by providers of the Lawra district for 2009.

1.4.2 Specific objectives:

The specific objectives of the study are to:

1. Describe the rational drug use indicators of providers of the Lawra district.

2. Identify factors which affect rational prescribing by providers of Lawra district.

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1.5 Research questions

1. What are the prescribing habits of providers in Lawra district?
2. What are the reasons for the prescribing habits of providers of the mutual district health insurance of Lawra?

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CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

Despite improvements in essential drugs programs in pharmaceutical selection, procurement, distribution, and financing, problems remain in the rational use of drugs. Multiple drugs on a prescription (polypharmacy), the over prescribing of antibiotics, the misuse of injections and poor patient compliance are common patterns of irrational drug use worldwide. This literature review is organised into: drug prescribing as seen in developed and developing countries, measuring drug prescribing; drug use indicators, improving drug use and managerial approaches to prescribing.

2.2 Public health importance of rational prescribing

Treatment with drugs is one of the most cost-effective medical interventions known (WHO, 2002). The proportion of national health budgets spent on medicines ranges between 10% and 20% in developed countries and between 20% and 40% in developing countries (WHO, 2002). According to WHO (2002), worldwide, more than 50% of all medicines are prescribed, or sold inappropriately.

Irrational use of medicines is a public health problem (WHO, 2006) indicated that due to the expansion of market forces, prescribing was becoming more expensive and irrational. Drug prescribing is often the end result of most medical consultations and drug therapies are the most common treatment in medical practice (Soumerai and Lipton; 1994) .Drugs play an essential role in medical care and are used in virtually all medical specialties and for numerous health conditions. Drugs play an important role in the health care delivery system and its availability is one factor known to improve utilization of health services (Odusanya *et*

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al; 1999). Drugs are expensive, constitute a large percentage of the costs of health care and therefore require optimal or rational use. Appropriate drug utilization has a huge contribution to global reductions in morbidity and mortality with its consequent medical, social and economic benefits (Teferra *et al*; 2002) .

Prescribers often cite patient demand as one of the main reasons why they over-prescribe, but the degree to which this is so is unknown (Kathleen *et al*; 2002). Patients feel they need more drugs than they are prescribed. The reliable supply and availability of drugs are considered to be the indicator of high quality care in most of developing countries, but availability of drugs alone is not a definite criteria for high quality care unless the appropriate use of drugs is ensured.

2.3 Drug prescribing in developed countries

Developed countries have policies to ensure rational prescribing of drugs (Laing *et al*; 2001). Australia is unusual amongst developed countries in having a national medicinal drug policy (Mant *et al*; 1993). Quality use of medicines is an important part of this Australian policy but, to date, there has been no development of a systematic and effective policy for prescribing (David *et al*; 1997). In Australia, Pharmaceutical Benefit Scheme covers 85% of all drug use in the country and applies very strict criteria for rational prescribing including comparative cost-effectiveness, for the reimbursement of drugs (Drummond *et al*; 1992) and Freund *et al*;1992). In the United States of America, healthcare organizations operate on the basis of clinical guidelines, recommended formularies, and generic substitution (Lipton *et al*; 2000 and Gold *et al*; 1995). In the United Kingdom, practice formularies and budget-holding are increasingly common (Baines *et al*; 1997) and (Bloor and Freemantle; 1996). European drug formularies contain some hospital policies on drug-use and drug restrictions, hence promoting rational prescribing. The US also mandates drug utilization review programmes and

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pharmacist counselling to improve drug use in the publicly-funded Medicaid programme (Brushwood *et al*; 1997) and (Sumerai *et al*; 1996).

2.4 Drug prescribing in developing countries

Irrational prescribing of drugs is a problem commonly observed in health care systems throughout the world (Avorn *et al*; 1987), especially in developing countries like Ghana (Ofori-Adjei *et al*; 2004). Inappropriate prescribing has been identified in many health facilities in developing countries. Misuse of antibiotics, overuse of injections, and under-use of life-extending drugs for illnesses such as HIV/AIDS, heart disease, and other chronic illnesses together constitute a global epidemic of irrational use of medicines. Prescriptions may be written using the generic name of a drug, or may be written using a specified brand name. Although different brands of the same generic drug have the same active ingredient, they are not otherwise identical, and may be administered in different ways or have different side-effects. The 1985 Nairobi conference on the rational use of drugs marked the start of a global effort to promote rational prescribing. It is a matter of great concern that the misuse and irrational use of drugs is still common in most countries including Ghana. Because good quality prescriptions are extremely important and contribute to minimizing medication errors, physicians should adhere to the guidelines of prescription writing for the advantage of the patient (Yacoub *et al*; 2004).

Prescribing and use of medicines unfortunately unlike developed countries, is sub-optimal in developing countries. Well known examples are inappropriate combinations of medicines, the prescribing of unnecessarily expensive medication and overuse of antibiotics or injections (WHO, 2002). Over the last decades, many initiatives were taken to improve the appropriate and rational use of medicines in developing countries focusing on practical skills, and linked to the use of standard treatment guidelines, through a repeated effective in-service training

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(Laing *et al*; 2001). Traditional training methods in the developing world, have been shown to be less effective than adult education techniques which use interactive methods, such as discussion and feedback, as has been found in developed countries (Ofori-Adjei *et al*; 1996). Ahmet *et al*; (2009) showed that, training at the undergraduate level positively changes in-practice physicians' prescribing habits at postgraduate level. It is imperative to know the existing drug use indicators to assess prescribing habits.

2.5 Drug use Indicators

WHO has developed three standard sets of indicators which can be used to assess drug use patterns. These include: Prescribing Indicators; Patient Care Indicators; and Facility Indicators. These indicators have been selected through a process of discussion, field testing, and revision, involving a wide range of people coordinated by INRUD (International Network on Rational Use of Drugs), with support from WHO/DAP (Drug Action Program). Other indicators may be used when different needs arise (Laing, 1994 and WHO, 1993).

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2.6 Improving use of drugs

There are three broad categories of interventions to improve drug use. These have been classified as educational approaches, managerial approaches and regulatory approaches (Ross-Degnan et al. 1997) and (Laing, 2001).

Educational approaches attempt to inform or persuade prescribers, dispensers, or patients to use drugs in the proper, rational and efficient way. There are many types of this approach such as in-service training, face-to-face education, small group discussions, seminars, workshops and printed education materials (Ross-Degnan et al 1997). European Association of Hospital Pharmacists (EAHP) 2005 survey provide an excellent basis for pharmacists to educate prescribers about rational drug therapy. This will influence the prescribers' drug choices, either directly or indirectly, through increased awareness of the hospital's policies. Such strategies have also proven effective in developing countries such as Sri Lanka, where prescriber education about formulary restrictions produced improvements in formulary compliance (American journal of health systems pharmacy, 2009).

A study in the USA described an intervention that targeted authoritative senior department members on the issue of antibiotic prophylaxis of caesarean sections. The intervention involved developing guidelines, which were presented to leaders in the department of obstetrics and gynaecology in a hospital. These department leaders ensured through various means that the desired antibiotic cefazolin was used rather than cefoxitin. A dramatic change in usage patterns occurred and was sustained (Avorn, 1983). Under the title of Drug Education Project, a group of investigators have reported that rational prescribing training by various learning tools improved prescribing in asthma and urinary tract infections in the Netherlands, Sweden, Norway, Germany and Slovakia (Veninga *et al*; 1999 and Lagerlov *et al*; 2000).

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The purpose of training prescribers and dispensers is to improve knowledge and change habits. Lack of knowledge and poor habits are often underlying factors for irrational drug use. One important foundation for long-term improvement in drug use is improving the quality of pre-service training about therapeutics (Montagne et al 1995 and Geest et al 1987). Some studies have shown that a short, interactive, problem-oriented training course using appropriate training materials significantly improved drug prescribing practices (Widyatuti et al 1999). A study on the impact of short course in pharmacotherapy for undergraduate medical students conducted in seven universities in Groningen (Netherlands), Katmandu (Nepal), Lagos (Nigeria), New Castle (Australia), New Delhi (India) and Yogyakarta (Indonesia), showed that students from the intervention group prescribed significantly better than controls in all patient problems presented (de vries et al 1995).

According to Soumerai et al (1990) printed materials such as guidelines are the most common and least expensive type of educational interventions. This can be mailed to prescribers and dispensers, posted on health centers and hospital walls, and personally handed to prescribers and patients. One of the reasons for incorrect prescribing is a lack of information. Another is that if prescribers had the correct information, their prescribing would automatically improve. However this is not always the case. Studies in Western countries have shown that distributing printed education materials alone resulted in brief, very small or non-existent improvements in prescribing. Many a times these materials are not even read by prescribers (GNDP, 2004). In developed countries, a Drug and Therapeutic Committee (DTC) has been very effective in promoting rational use of medicines (Thurmann *et al*; 2000).

A Drug and Therapeutics Committee (DTC) program introduced by SEAM, in five Catholic hospitals in Ghana to address and improve the quality of prescribing and dispensing found after evaluation that, the quality of prescribing improved and overprescribing reduced

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(Annan *et al*; 2000). It was observed that with continuation of the DTCs, the rate of overprescribing can be further lowered. Compliance with the selection of medicines was good, but much more needs to be done to promote adherence to the STG-recommended dosages and frequency of treatment.

2.7 Managerial approaches to rational drug prescribing

According to Laing et al (2001) and Ross-Degnan et al (1997) managerial strategies improves drug decision-making by a variety of techniques including developing and implementing Essential Drug Lists, Standard Treatment Guidelines, implementing drug supply kit system, monitoring and feedback, establishing representative Pharmacy and Therapeutics Committees, establishing structured drug prescribing form, providing cost information, and set-up financing. Essential Drug Lists provide prescribers with a list of the drugs felt to be most effective and economic in treating important health problems. In general, larger drug lists are considered appropriate in settings with better-trained health workers, for example physicians, while community health workers may only be able to prescribe 20 drugs effectively (Ross-Degnan et al 1997).

Certain factors are important in determining how effective guidelines will be in changing behavior in different settings, for example, how the guidelines are produced, how the guidelines are disseminated and whether the guidelines are "user-friendly" (Quick et al 1998). A study from Uganda showed that implementing Standard Treatment Guidelines followed by training and supervision was more effective in reducing the average number of drug prescribed and percentage of cases given antibiotics compared to distributing STG alone (Kafuko *et al*; 1999). Another study from Tanzania showed that developing and implementing STGs followed by monitoring reduced incorrect treatment (Wiedenmayer *et al*; 1999). In Wassa West district in Ghana, patterns of prescriptions studied were related to

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prescribers participation in recent refresher training and patient demand (Ofori-Adjei *et al*; 2004). In hospitals, it may be possible to create simple drug prescribing forms to correct common prescribing errors. A study evaluated intravenous antibiotic order form developed at a Boston teaching hospital. This simple intervention, which combined both managerial and educational elements to improve prescribing, results in savings by reducing unnecessary drug expenditures (Soumerai *et al*; 1990).

Another managerial approach, the utilization audit, involves collecting and analyzing data on past or current prescribing by health facilities, clinical departments, or individual prescribers. Data on performance are usually fed back to prescribers (Ross-Degnan *et al*; 1997). Hospital Pharmacy and Therapeutics Committees are designed to ensure the safe and effective use of medications in hospitals. This committee promotes the rational use of drugs through the development of relevant policies and procedures for drugs selection, procurement and use as well as through the education of patients and staff. However, there has been little critical evaluation of the clinical or economic impacts of this approach in developing countries.

2.8 Measuring drug use

Measuring existing drug use practices is paramount to understanding drug use problems. There are two methods, quantitative and qualitative for measuring drug use. The method to be used in a particular situation depends on the nature of the problem, the objectives of collecting data, the availability of resources and the time available.

Quantitative methods describe drug use patterns, but are limited in understanding why these patterns exist (WHO, 1993). Quantitative methods are used to collect quantitative data such as number of drugs prescribed and number of patients who received antibiotics or injections to create rates, averages and other summary measures to describe the nature and extent of drug use practices. Quantitative data can be collected by many different methods such as

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consumption data, record review, small scale surveys and from household data (WHO; ,1992; ,1993). In the consumption data method, data sources come from drug supply orders, stock cards, shipping and delivery receipts. This method is useful for studying aggregate patterns of drug use and expenditure, comparative use of drugs within therapeutic classes and comparative use by different facilities or areas. The required data are usually in district health offices and Pharmaceutical Warehouses (Quick, 1988). Data sources for record review come from patient registers, health worker logs, medical records and pharmacy receipts. This method is useful for studying drug use per case, overall and by group (age, sex and health problem), provider-specific prescribing patterns and features of patient-prescriber interaction (WHO, 1992, 1993). WHO has published a small scale health facility survey manual which is the most widely used method for collecting drug use data (WHO, 1993). These surveys gather information, about a sample of patients, health facilities, or events such as prescribing encounters and can be conducted retrospectively or prospectively. Retrospective data can be obtained from patient registers, health workers log books, pharmacy receipts and medical records. Prospective data can be obtained from patient observation, and patient exit surveys (WHO,1993 and Quick, 1998). This study will use the quantitative methods of records review used to collect data such as number of drugs prescribed and number of patients who received antibiotics or injections to create rates, averages and other summary measures to describe the nature and extent of drug use practices. This method is cost effective, feasible and been extensively used by WHO in assessing prescribing habits in developing countries. Other quantitative methods such as consumption data, small scale surveys and use of household require long period of time and plenty resources and hence not feasible within the limited time of this study.

Qualitative techniques are better suited to examine underlying feelings, beliefs, attitudes, and motivations about rational drug prescribing (WHO, 1992). Common methods to collect

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qualitative data on drug use include in-depth interviews, focus group discussions, structured observations, structured questionnaires, and simulated patient visits (WHO, 1992). The particular method depends on the nature of the problem, what the objectives of collecting the data are, what resources and time are available and the local capacity and experience of studying drug use (WHO, 1993). The purpose of this study is to assess rational drug prescribing. Therefore, this study will employ in-depth interviews, rather than focus group discussions, structured observations, structured questionnaires, and simulated patient visits. The district has very few prescribers in the various facilities, and in some cases one person. This makes it difficult to have focus group discussions. Also, structured questionnaire will likely not address the reasons motivating the prescribing habits in the district.

2.9 Health Systems and its Building Blocks

WHO describes a health system as consisting of all the organizations, institutions, resources, and people whose primary purpose is to improve health. It needs staff, funds, information, supplies, transport, communications, and overall guidance and direction. And it needs to provide services that are responsive and financially fair, while treating people decently (WHO, 2007). Strengthening health systems involves addressing key constraints related to health worker staffing, infrastructure, health commodities (such as equipment and medicines), logistics, tracking progress, and effective financing.

The building blocks represent the basic functions of health systems. They cannot function independently of one another. Medical products, vaccines, and technologies impact service delivery and reflect the availability and distribution of care, which are immediate outputs of the health system. (WHO, 2008).

The ability of a country to meet its goals in health depends on the workforce responsible for organizing and delivering health services (WHO, 2008). Unfortunately, there is wide

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variation in the type, skill, and gender mix in the health workforce across and even within countries (WHO, 2007).

The need for sound information is especially urgent in the case of acute health threats, such as irrational prescribing where rapid awareness, investigation, and response can save lives and prevent broader national outbreaks and even global pandemics (HMN, 2008).

WHO defines service delivery as the way inputs are combined to allow the delivery of a series of interventions or health actions (WHO, 2001a). Service delivery is the main function the health system has to perform, and it is often thought of as the only function of a health system. Service delivery is an immediate output of the inputs of the other building blocks, such as health workforce, medical products, and finances (Islam, 2007).

A well-functioning health system ensures equitable access to medical products, vaccines, and technologies of assured quality, safety, efficacy and cost, and their sound and cost-effective use (WHO, 2007). Policies that affect the health system structure and financing may have negative impacts on individuals' use of pharmaceuticals, with outcomes such as reductions in access or overconsumption. Policymakers should monitor the effects of implementing heath system reforms through key patient use indicators that have already been developed and tested (Laing, et al., 2001).

According to WHO, the purpose of health financing is to "make funding available, as well as to set the right financial incentives to providers, to ensure that all individuals have access to effective public health and personal health care" (WHO, 2000).

Governance in health systems is about establishing effective rules in the institutional arenas for policies, programs, and activities related to public health functions in order to achieve health sector objectives (USAID, 2008. According to WHO, this building block (also

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referred to as stewardship) is the most complex but critical building block of any health system (WHO, 2007).

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CHAPTER THREE

3.0 METHODOLOGY

3.1 Introduction

Based on the general objective of this research which was to describe the prescribing patterns by providers of health facilities in Lawra, a combined quantitative and qualitative study design was thought to be most appropriate because these methods were feasible, cost effective and widely used by WHO. The chapter has been organised into the following sub-sections: Study design, study area, health service organisation, variables, sampling, sample size, methods and tools and protocol for selecting respondents.

3.2 Study design

A cross-sectional study was used to describe prescribing patterns and the reasons for such patterns by providers of the mutual district health insurance of the district.

3.3 Study area

Lawra district is located at the extreme north- western corner of Ghana (Figure 2). It covers a total land area of 1051.2 sq km and has 157 communities with 95% of the inhabitants in the rural areas. It is boarded to the East and South by the Jirapa/Lambusbie district and to the north and west by Burkina-Faso. The population density is about 96 people per square kilometre. It is the second most densely populated district in the Upper West Region.

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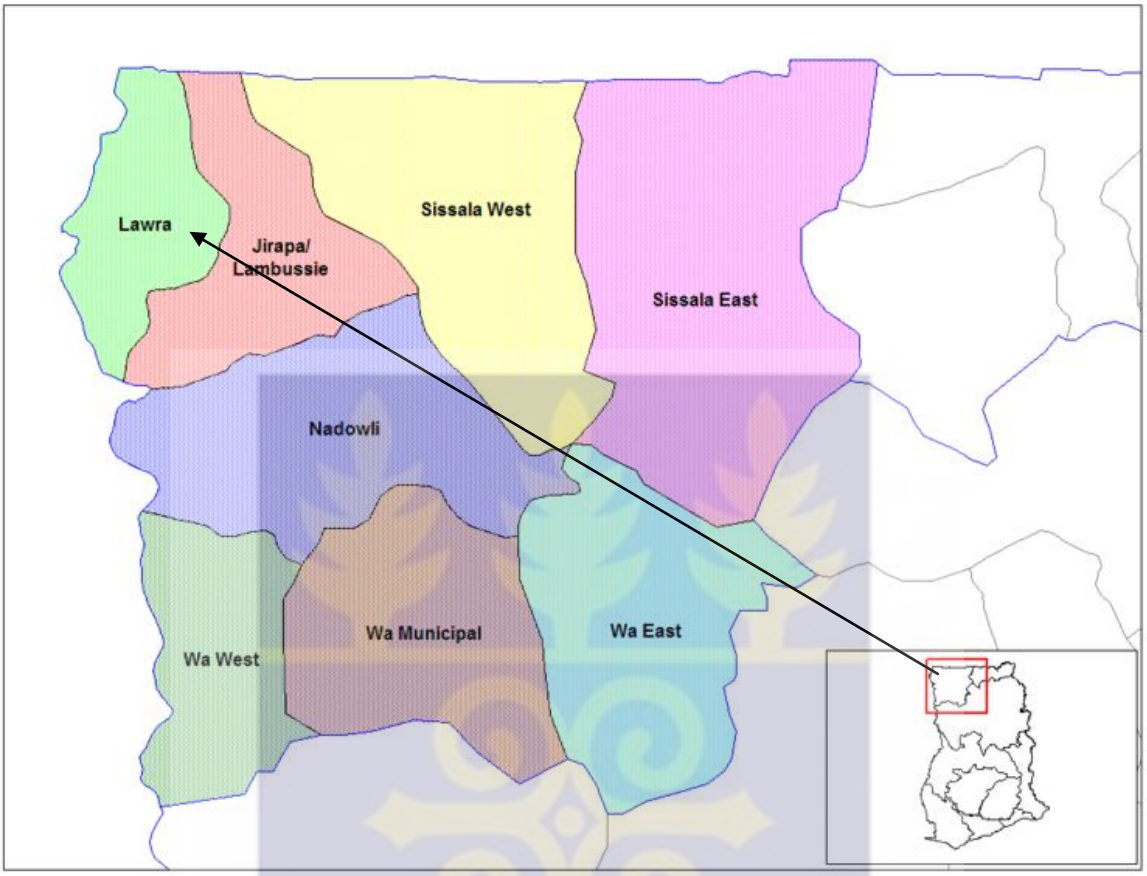
Figure 2: Map of Ghana showing Upper West Region and Lawra District.



The Lawra District has an estimated population of 100,162 projected from the 2000 population census. It is the oldest district among the nine districts in Upper West Region but has not realised any significant development since independence. The dominant ethnic groups are Dagaabas and Lobis who speak Dagaare and Lobi respectively. There are however a few Waala and other settlers from across the country. There are 157 identified communities with a very high illiteracy rate. There are however a few Waala and other settlers from across the country. There are 157 identified communities with a very high illiteracy rate. . It is estimated that 83% of the population are engaged in subsistence agriculture. Food production is low due to the poor nature of the soil and unfavourable weather condition. Most of the

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youth have to migrate to the southern part of the country every year either immediately after harvesting the poor yields of crops from their small size farms or after writing their Junior Secondary School or Senior Secondary School Certificate examinations. The aim of the migration is to marshal resources for the upkeep of their families during the lean season and cater for their education if lucky to progress on the educational ladder. Animal farming, especially poultry rearing is a lucrative venture in the district. Fishing also goes on along the Black Volta and its tributaries to supplement the meagre income of the families of fishing communities.

3.4 Health service organisation

There are ten (10) sub-districts, which offer health services to residents of the district. Eight (8) of the sub districts are being served by health centres and the remaining two are Reproductive and child health centres attached to the hospitals in the district

The district has two hospitals (a district hospital at Lawra and one Agency hospital at Nandom). In an effort to reach all settlers in the district, the district has implemented the CHPS programme with 8 CHPS compounds in operations as at December 2009. The CHPS concept is the case where health services are brought to the door step of the community. Community Health Officers are stationed in the CHPS compounds from where they go round households to educate them and also manage simple illnesses. They offer routine services like health education and child welfare.

There are 222 trained TBAs, 162 Community-based Surveillance Volunteers and 324 CBAs. There are 99 Traditional Healers / Herbalists and 23 Chemical Sellers in the district but most of the Chemical Sellers are located in Lawra, Nandom and Babile townships. The shops serve as sources for first aid drugs for the mass populace in the district. It is rather unfortunate that customers abuse most of the drugs sold to them.

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Health services are made accessible in the district through 12 static health facilities and 109 outreach points. Generally, accessibility to health service is adequate taking into consideration the compact nature of the district and its number of health facilities.

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3.5 Variables

Dependant variable

The dependent variable for the study is Drug Types. This include: Number of drug types, Generic drugs, Essential drugs, Antibiotics and Injections.

Independent variables

The independent variables include: Facility type, and professional background of prescriber, age of patient, diagnosis of patient, patient preference.

3.6 Study Population

The study population consisted of 300 drug prescription records of patients attended to at the OPD in health care facilities, 12 prescribers and 10 facility managers in Lawra district.

3.7 Sampling

Due to resource constraints, only Government health care facilities were selected for the study. All the public health facilities (two hospitals and eight clinics) were included in the study. At each of the facilities systematic random sampling was employed for the selection of 30 records within the last quarter of 2009 (WHO, 1993). If a selected record did not meet the selection criteria, in terms of lacking a prescription or date of attendance, it was rejected and the next in line selected until the thirty (30) required sample at each facility of existing patients' records were reviewed. The facilities had the same administrative procedures in terms of keeping patient prescription records in folders. All of them obtained their drugs from the regional medical stores even though such drug supplies depended on payments of previous supplies. All the prescribers of the health care facilities had some training on rational prescribing in the addition to their individual professional training.

3.8 Sample size

The sample size was 300 drug prescription records of patient seen at OPD from September 2009 to December 2009. For this kind of study, the WHO recommends the inclusion of at

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least 30 randomly selected outpatient records at each facility (Hogerzeil et al, 1993). The district has ten facilities made up of eight health centers and two hospitals and all were included in the study. For the ten (10) facilities, three hundred (300) records were sellected.

3.9 Tools

Three tools were designed and used to collect these data. The tools were:

1. Facility Audit Questionnaire: This questionnaire (Appendix 3) looked at general issues that affect quality of prescribing at the facility including number of prescribers, supervision, the availability of standards treatment guidelines and Essential drug list. One questionnaire was filled for each facility.

2. Provider Interview: A semi-structured questionnaire (Appendix 2) was used to interview purposively selected prescribers present for the period of records review. This questionnaire assessed training, knowledge and prescribing practices. It also reviewed the availability of standard treatment guidelines and looked at providers experience.

3. Patient Record Review: Compilation forms (Appendix 1) were used to collect information on the number of drugs prescribed, the number of generic drugs prescribed, drugs prescribed from the essential drug list, prescriptions with antibiotics, prescriptions with injections and the number of drugs per encounter. A total of 300 records were reviewed.

3.10 Protocol for selecting respondents

Records review

Standardised methods of investigating drug use indicators (WHO, 1993) were employed in the conduct of the study. These methods recommend a study of 100 patient records in a single health facility or 30 records in 10 different clinics/ health facilities (Hogerzeil et al, 1993). The records for patients who were attended to at the outpatient department of the health

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facilities in Lawra for the months of September, October, November and December 2009 were reviewed. A total of 300 records in the 10 facilities in Lawra were reviewed.

Inclusion criteria

1. Samples were taken from patient's records from October –December 2009
2. Only outpatients records were used.

Exclusion criteria

1. Patients records of preventive and promotion treatments such as family planning from October –December 2009 were not used.
2. Patient records that did not include dates of attendants and drugs prescribed were not included.
3. All other patient records from January-September 2009 were not used.

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3.11 Data processing and analysis

3.12 Statistical methods

Data entry, processing and analysis were done using the PC-SPSS computer programme version 17. This involved coding of the questions and responses into numeric form for the data entry. Frequency distribution and percentages were obtained for the variables, and presented in tables, graphs, pie charts, and histograms.

3.13 Limitations of the study

Records of children in this study were difficult to obtain since they are kept in child welfare records by mothers at home. Facility poor record keeping made it difficult to trace patients' prescriptions from the records pile. There were also records with missing data. There were inadequate resources in terms of time, finances and transportation. Although only public facilities were used for the study, yet the findings were adequate to represent the prescription pattern of facilities in the Lawra district.

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3.14 Ethical issues

Approval was sought from the Ghana Health Service Ethical Review Committee. Permission to conduct the study was obtained from the Regional Director of Health Services of Upper West region, the District Director of Lawra district, the heads of public health facilities in Lawra proving curative care. Informed consent into the archives were obtained from records unit heads by making them endorse consent forms designed for the study. Informed consent from the prescribers were sought for with assurance of confidentiality, during the study. Because this study presented minimal risk and collected no personal information of clients or providers, written informed consent indicated by the signature of the interviewer were solicited. Participants in the research were given contacts of the Principal Investigator, Dr. Robert Amesiya with phone number: 0203692300 for future concerns and questions. The data collected for the research was stored in compact disk and external hard drives and are accessed with a password that is only available to the principal investigator and supervisor. The data was used for the sole purpose of the dissertation and dissemination of findings to the district health management team. Funding for this dissertation was by principal investigator and Lawra District Health Administration.

3.15 Pre-test

The data collection techniques and tools were pre-tested to determine the clarity of the compilation form, questions and also to reveal any problems that may be encountered in the main study. The pre-test was done in Jirapa district which was not chosen for the study. The reason for choosing this district was on the basis that it shares similar characteristics with Lawra district chosen for the study. The data collection techniques and tools were fine tuned

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before the actual data collection for the study was initiated. It was detected that, some questions were repeated and others were ambiguous.

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CHAPTER FOUR

4.0 RESULTS

4.1 Facility characteristics.

All the ten sub-districts in the Lawra District, were involved in the study. Eight sub-district health centers, and two hospitals were used for the study. Of the eight Health centers, seven were owned by government and one by the Catholic mission. Of the two hospitals, Lawra was government owned and Nandom was owned by the catholic mission.

Both hospitals have formal meetings at the end of each month to review their prescriptions and three out of the eight health centres (37.5%) had such meetings. None of the facilities had a Quality Assurance Team. Two facilities (20%) reported to have a Quality Assurance Action Plan, but no plan was seen.

4.2 Provider Characteristics

Twelve health providers working in the ten facilities were interviewed. Two of these interviewed were doctors; 2 were medical assistants, 1 was a midwife and 7 were community health nurses. Four of the providers interviewed were male and six were females. Ten providers (83%) routinely prescribe drugs for patients they see at OPD (Out Patient Department).

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4.3 Clients' characteristics

The mean age of the patients seen was 30 years; the minimum age was 1 and maximum age 88. There were one hundred and thirty nine (46%) males, one hundred and sixty one (54%) females.

4.4 Drugs Use Patterns

Among the 300 patients' prescriptions reviewed, the average number of drugs prescribed per patient was 3.2, with a range of 1 to 7 drugs. One hundred and fifty six (52%) patients were prescribed between 1-3 drugs; 132 (44.0%) received between 4-6 drugs and 12 patients (4%) received 7 drugs (Table 1). Ko and Ketuo Health Centers have the highest numbers of drugs per prescriptions of 4.0 each, whilst Eremon Health Center has the lowest number of 2.6 drugs per prescriptions. Out of the total 957 drugs, 35(87%) were in generic names, 903(94%) were prescribed from the essential drug list, 120(40%) were antibiotics and 26 (9%) were injectables (Table 1). Eremon and Baseble Health Centers have the highest numbers of prescriptions using generic names of 98.7% and 98.9% respectively, (Table 2).

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TABLE 1 DRUG USE PATTERNS

Drugs prescribed	Number of prescriptions
1-3	156(52%)
4-6	132(44%)
7	12(4%)
Total	300(100%)

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Table 2. Drug use indicators of various health facilities in Lawra district.

HEALTH Facility	Total number of drugs	Average number of per patient	Generic drugs (%)	EDL (%)	Antibiotics (%)	Injections (%)
Nandom	92	3.1	89 (96.7)	91 (98.9)	11 (36.6)	3 (10.0)
Lawra	110	3.7	90 (81.8)	106 (96.3)	13 (43.3)	1 (3.3)
Babile	94	3.1	90 (95.7)	94 (100)	20 (66.7)	1 (3.3)
Gengenkpe	82	2.7	72 (87.8)	81 (98.7)	16 (53.3)	3 (10.0)
Baseble	92	3.1	91 (98.9)	91 (98.9)	12 (40.0)	1 (3.3)
Ketuo	120	4.0	73 (60.8)	99 (82.5)	18 (60.0)	5 (16.7)
Ko	121	4.0	105 (86.8)	117 (96.7)	16 (53.3)	6 (20.0)
Zambo	84	2.8	80 (95.2)	82 (97.6)	5 (16.7)	5 (16.7)
Eremon	79	2.6	78 (98.7)	75 (94.9)	1 (3.3)	1 (3.3)
Domwene	83	2.8	67 (80.7)	67 (80.7)	8 (2.7)	0 (0.0)
Total	957	3.2	835(87%)	903(94%)	120(40%)	26(9%)

Ketuo Health Center had the lowest number of prescriptions (60.8%) using generic names. Hundred percent of the prescriptions from Baseble were from the essential drug list. Prescriptions from the essential drug list are high. It is over (90%) for most health facilities except Ketuo and Domwene that have 82.5% and 80.7% respectively. The percentage of prescriptions containing an antibiotic ranged from 3.3% from Eremon Health Center to 66.7% from Baseble. Prescriptions containing an injection were generally low with Ko Health Center having the highest of 20% and Domwene Health Center prescribing no injection at all. (Table 2).

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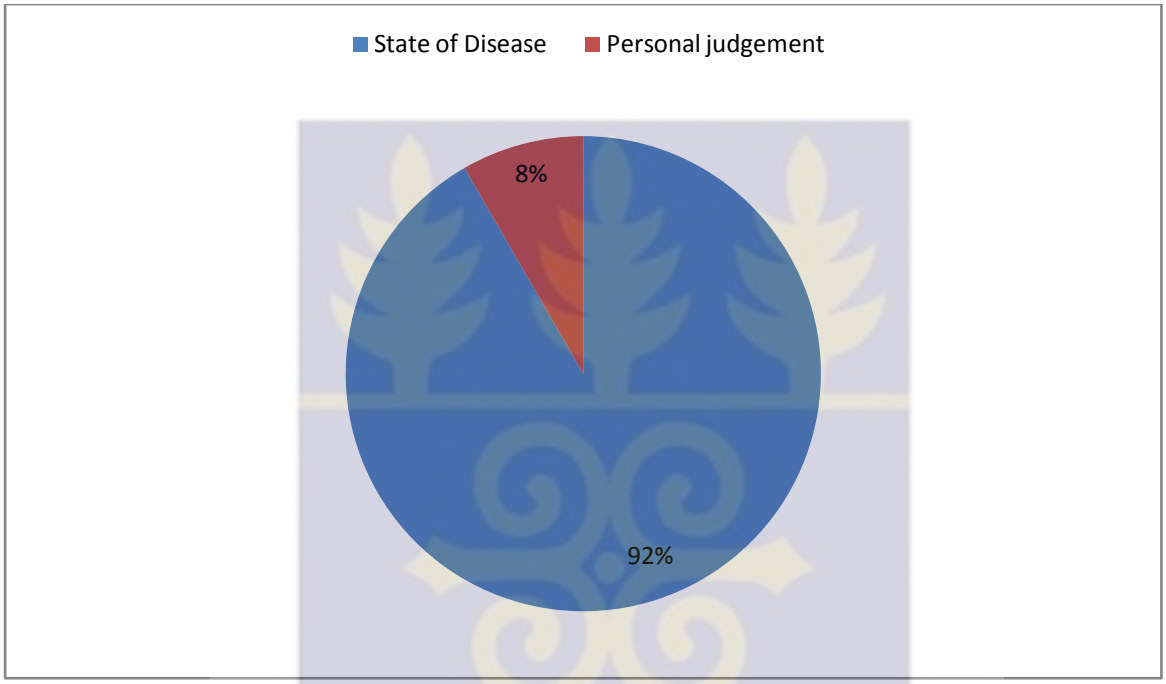
4.5 Factors affecting prescribing patterns of providers

Factors that influence providers' prescription of number of drugs as reported by one provider, was personal judgment whereas nine providers held the view that the disease predicted the number of drugs that were prescribed (Figure 3).

Figure 3 : Factors that influence providers to prescribe number of drugs



None of the providers mentioned pharmaceutical agents as influential in prescribing patterns. Three of the providers interviewed said the dosage of drugs they prescribe was influenced by patient's age, one mentioned side effects as a factor and most providers reported weight as the main factor (Figure 4).

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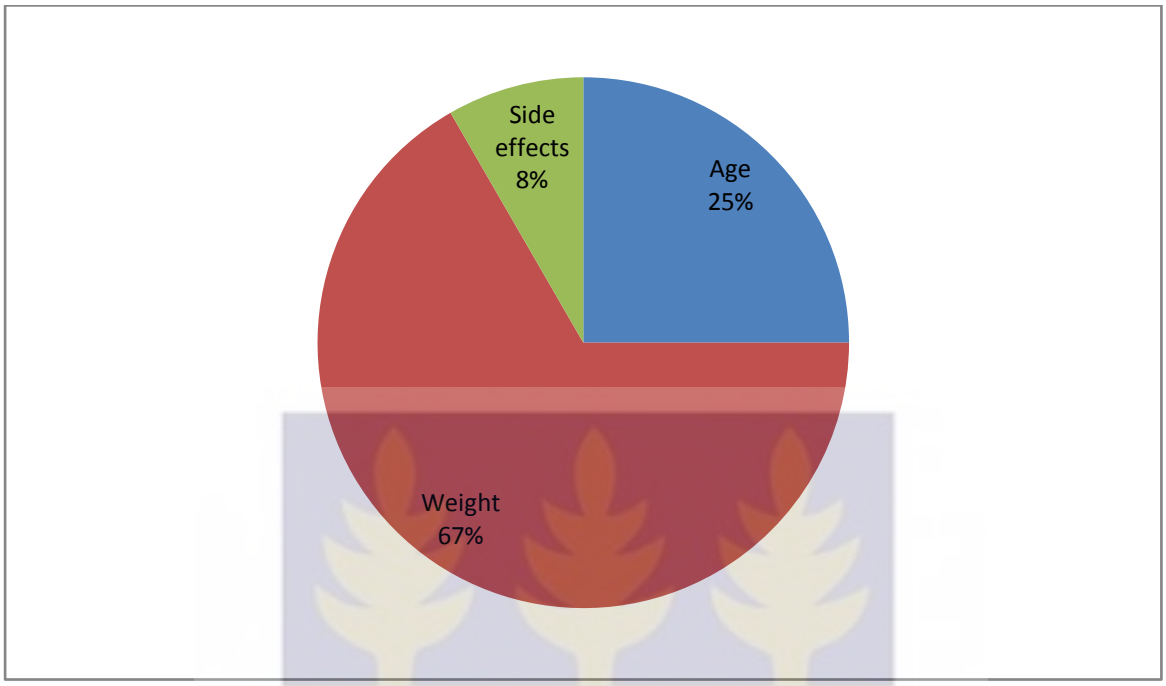
Figure 4: Factors influencing Providers prescription.



Most providers will not prescribe injections (83.3%) if side effects were associated with it whilst (16.7%) would prescribe (Figure 5).

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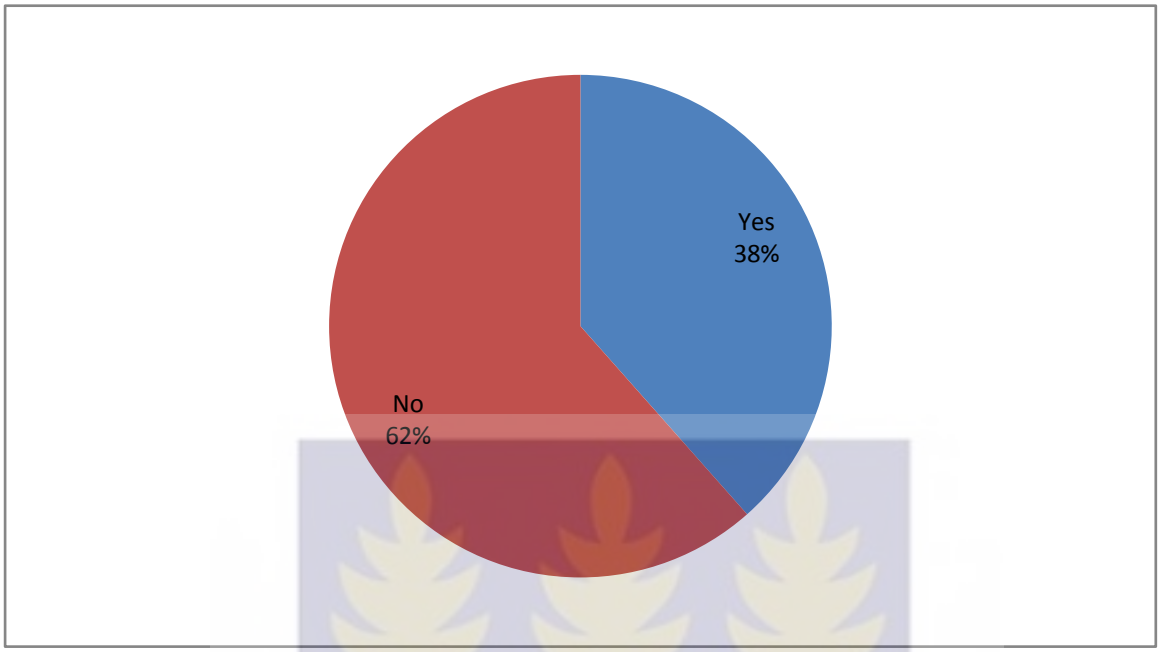
Figure5: Pattern of prescribing injections



4.6 Experience and technical skills of providers

Rational prescribing depends on the experience and competencies of the prescriber. In this study only two providers had received training on diagnoses, six on treatment and four on prevention. Two of the facilities, Lawra hospital and Babile Health Center had one staff each trained for rational prescribing. The 8 other facilities had no staff trained for rational prescribing. Three providers felt they needed additional training in diagnosis, 6 said they needed additional training in treatment and 3 need training in prevention. Three facility managers reported that only one staff of the facility had a copy of STG (Standard Treatment Guidelines), two facility managers mentioned that two staff had STG, two said all staff, one facility manager did not know whilst two facility managers said none of their staff had STG.

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4.7 Categories of staff prescribing

With regard to categories of providers prescribing, it was observed in six health centers nurses were the prescribers. Two Health Centers had a Medical Assistant each who prescribe. No Health Center had a Doctor. The two hospitals had Doctors and Medical Assistants who prescribe. Lawra hospital had 5 doctors whilst Nandom had 3 (Table 3).

The use of unqualified staff was reported in some facilities. The two hospitals did not have a problem of unqualified staff prescribing since there were enough of trained prescribers. On the other hand, all the Health Center managers explained that staff who were not trained as prescribers were made to prescribe because the few trained prescribers normally attended meetings in the district or region. Whilst the hospital managers were of the view that training of prescribers was the solution to rational prescribing whereas all the Health Center managers thought posting of qualified prescribers was the solution to the problem.

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Table 3: Categories of prescribers

Health Center	**Prescribers**
6	Nurses
2	Medical Assistants
3	Mid-wives
Hospital	**Prescribers**
8	Doctors
3	Medical Assistants

4.8 Availability of essential drugs

Essential drugs were reported to be availability in all the facilities. Whilst the two hospitals managers were of the view that training of the prescribers is the solution to rational prescribing all the health center managers thought posting of qualified prescribers was the solution to the problem.

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CHAPTER FIVE

5.0 DISCUSSION

This chapter discusses the findings of the research as related to the objectives. It is divided into: Mean number of drugs prescribed, prescribing generic drugs, prescribing antibiotics and prescribing of injections.

5.1 Mean number of drugs prescribed as an indicator of rational prescribing

Using the WHO indicators, the mean number of drugs per prescription was 3.2. This figure is abnormally high when compared with the recommended standard by GHS and WHO which is 1.4-1.7 drugs prescribed per encounter (Walker *et al*; 1990). It is also high when compared to other countries. For example, in the Asir region of Saudi Arabia the mean number of drugs prescribed per encounter was 1.44 (Mahfouz *et al*; 1997). A study of 12 developing countries showed that the mean number of drugs prescribed was 1.6 (Hogerzeil and Ross-Degnan; 1993). Two countries (Indonesia and Nigeria) were excluded as their values (3.3 and 3.8 respectively) were attributed to irrational drug use, in particular to polypharmacy (Hogerzeil and Ross-Degnan; 1993). In Lagos Nigeria, however, the implementation of rational drug use policies produced a significant decrease in the number of drugs prescribed 10 years later (Odusanya and Oyediram; 2004). In this study the overprescribing was the view held by most providers (9 out 12) that number of drugs they prescribe depended on the state of patient's disease and this could be due to the fact that most of the prescribers in the district were unqualified as alluded by most facility managers (8 out of 10).

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5.2 Generic drug prescribing as an indicator of rational prescribing

Prescribing by generic names of drugs was found to be very high in this study where 87% of the prescribed drugs was by the generic name of the drug used. Prescription of drugs using generic names offer many advantages, including low cost, safety and effectiveness. Comparing this with other studies in Karachi, Pakistan it was observed that consultants prescribed only 12% of drugs by generic name (Das, 2001) and in Lebanon, where only 2.9% of prescriptions contained drugs prescribed by generic names (Hamadeh, 2001). In contrast within the African region, prescribing by generic names in districts is higher. For example, in Niger, prescribing of drugs by generic name from the national drugs list is almost 100% (Mallet et al, 2001), while 94% of drugs prescribed in Zimbabwe are by generic name (Hogerzeil and Ross-Degnan; 1993). The high prescription of generic drugs could be attributed to the pasting of disease conditions, corresponding drugs used in treating them by their generic names as well as dosages for various weights and age groups.

5.3 Prescribing antibiotics as an indicator of rational prescribing

The percentage of encounters resulting in the prescribing of antibiotics was 40% in Lawra. This is low when compared with health facilities in countries such as Jordan at 60.9% (Otoom, 2002) and Sudan at 63% (Hogerzeil and Ross-Degnan; 1993) shows that prescribing of antibiotics in Lawra is low. In Saudi Arabia prescribing of injections was 56.2% (Mahfouz, 1997). However in Africa Lawra district's prescription of antibiotics is higher than in Zimbabwe with rate of 29% while Malawi had a rate of 34% (Hogerzeil and Ross-Degnan; 1993). In the Middle East, Lebanon had a rate of 17.5% in a university health centre (Hamadeh, 2001). In Europe, Andorra had an antibiotic prescribing rate of 27% (Vallano et al, 2004), while in central and South America Ecuador and Guatemala had rates of 27% (Hogerzeil and Ross-Degnan; 1993). The overuse of antibiotics in Lawra can lead to serious clinical problems, such as development of drug resistance, super-infection,

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allergies and other health hazards. The inappropriate use of antibiotics in clinical medicine is widespread, sometimes at inadequate dosages and often used for nonbacterial infections. This is more evident in the hospital setting where the use of antibiotics is maximal. The major reason for this is due to a lack of uniform policy, the lack of education and the over-the-counter availability of antibiotics in developing countries (Otoom, 2002). Reasons attributed to such high use of antibiotics range from the lack of Standard Treatment Guidelines to patients demand for antibiotics even in mild and viral infections in Lawra.

5.4 Prescribing injections as an indicator of rational prescribing

The proportion of encounters resulting in injections was 26%. This is higher than values obtained in Nepal (5%) and Zimbabwe (11%) (Hogerzeil and Ross-Degnan; 1993), although strikingly higher than that reported for the north of Jordan (1.2%) (Otoom et al, 2002). Patients who prefer injections belief that they are more effective than tablets, especially in the treatment of infections, leads to high demand for injections. When compared with both the international average of 17% and that of other countries in the developing world (Hogerzeil and Ross-Degnan; 1993), the rate of injections in Lawra is relatively higher, indicating irrational prescribing. The implications of high use of injections in Lawra include inconvenience, more expensive, less safe, painful and require skilled personnel to administer.

Rational drug use is well recognized as an important part of health policy. There is evidence that rational use of drugs requires that patients receive medication appropriate to their clinical needs, in doses that meet their own requirements, and for an adequate period of time at the lowest cost to them and their community (WHO,1985). Studies suggest that over-prescribing, multi-drug prescribing, misuse of drugs, use of unnecessarily expensive drugs and overuse of antibiotics and injections are the most common problems of irrational drug

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use by prescribers as well as consumers (Hogerzeil, 1995). Although many efforts have been undertaken to improve drug use in developing countries only few evaluations have been done in this field.

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CHAPTER SIX

6.0 Conclusion

Providers in health facilities of Lawra district prescribe significantly more drugs, antibiotics and injections per encounter and the contributory factors included lack of STG, state of patients diseases, unqualified prescribers and high patient's demand.

The study also showed high performance for prescribing drugs using generic names and in accordance to Ghana EDL. The major factor for this is that generic drugs from EDL are laminated and displayed in consulting rooms in most health facilities in Lawra district.

6.1 Recommendation

Prescribers in all health facilities in Lawra district should be advised to prescribe the lowest number of drugs needed and to avoid symptomatic treatment whenever possible. Antibiotics and injectable drugs should be prescribed with care and only when indicated. More effort is needed to ensure that drug information resources such as national STG are available at all the health facilities. The District Health Management Team should supervise, monitor, and give feedback to health providers,by developing and implementing interventions about drug use in general and prescribing in particular in order to improve prescribing practices and rational use of drugs in the district.

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APPENDICES

Appendix 1: Patient's Records compilation form – Lawra district

Consent / General Information COMPILATION FORM

FOR OUTPATIENT SERVICES: FIND THE FACILITY RECORD UNIT HEAD OR MOST SENIOR HEALTH WORKER RESPONSIBLE

FOR OUTPATIENT SERVICES WHO IS PRESENT AT THE FACILITY. INTRODUCE YOURSELF AND READ

THE FOLLOWING:

I am a student of the school of Public Health of the University of Ghana, Legon. In doing my MPH dissertation, I am collecting information on PRESCRIBING HABITS at health facility level in the district. The information will be useful to the facility and DHMT in planning your health service delivery. This part of the survey will review records of patients seen and managed at out- patient department. It will take between 1-2 hours to complete. All information from this survey is confidential and using any records for this survey is voluntary. No names of patients will be collected. You can refuse to let me use any record. I

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am asking for your help to ensure that the information collected is accurate. If there are sections where someone else is the most appropriate person to provide information, I would appreciate your introducing me to that person. If you need more information about this study you can contact Dr Robert Amesiya, phone number 0203692300 or Dr Reuben Esena, phone number 0277220276.

Do you have any questions for me? Can we begin now?

SIGNATURE OF INTERVIEWER.....

SIGNATURE OF INTERVIEWER INDICATES PARTICIPANT AGREEMENT TO PARTICIPATE AND THAT THE TIME IS CONVENIENT

Name of facility.....

Type of facility 1. Hospital [ ] 2. Health centre [ ]

Name of investigator..... Date of data collection...../...../.....

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OPD number	Date of attendance	Age	Sex	Drugs	Generic (write 0/1) 1=yes 0=n0	On EDL (write 0/1) 1=yes 0=no	Antibiotics (write 0/1) 1=yes 0=no	Injections (write 0/1) 1=yes 0=no
				1				
				2				
				3				
				4				
				5				
				6				
				7				
				8				
				Total=	=	=	=	=

Appendix 2: INTERVIEW GUIDE FOR PROVIDERS

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Instructions: Interview all providers at the facility who provide curative care services. At a minimum, interview three persons across professional categories.

PROVIDER CODE---------- (start numbering the interviews at each facility with one and continue until you have interviewed all the providers who prescribe at OPD in the facility)

INTERVIEWER: INTRODUCE YOURSELF TO THE PROVIDER/ CONSENT

I am a student of the school of Public Health of the University of Ghana, Legon. In doing my MPH dissertation, i am collecting information on prescribing habits in the district. This information will be useful to the facility and DHMT in planning your health service delivery. All information from this survey is confidential and participation in answering questions for this survey is voluntary. You can refuse to answer any question or all the questions. I am asking for your help to ensure that the information collected is accurate. If you need any further information please feel free to contact Dr Robert Amesiya, phone number 0203692300 or Dr Reuben Esena, phone number 0277220276.

Do you have any questions for me?

SIGNAT URE OF INTERVIEWER .....

This indicates participant's agreement to participate.

Name of the sub-district.....

Name of facility.....

Type of Health Facility : 1= Hospital; 2 = Health Centre

Operating Authority:

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1= Government; 2 = Quasi-government 3= Mission

Date of interview-----/------/-------

Name of the interviewer.....

Provider category*: (1=Doctor; 2=Medical Assistant; 3=Nurse;

4= Midwife; 5= Community Health Officer; 6=other ;specify.....)

Sex of Provider: (1=male; 2=female)

1.Do you personally prescribe at OPD

Yes.....1

No.....2

2.What year did you graduate? -----/-----/----

3.In what year did you start working at this facility?-----/-----/-------

NOW I WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT THE SERVICES YOU PROVIDE HERE IN RELATION TO PRESCRIBING.

4.What do you perceive as a good prescribing habit?----------

---

---

5. Do you routinely prescribe drugs to anyone who comes to see you at OPD?

Yes.....1

No.....2

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If no skip to question 9.

6.How many drugs do you often prescribe to patients who come with malaria at OPD? .....

7.How many drugs do you often prescribe to patients who come with diarrhoea at OPD?.....

8.How many drugs do you prescribe to patients who come with pneumonia at OPD?.....

9. What factors influence your request for the number of drugs?

1. State of disease

2. Personal judgement

3. Patients request

4. Availability of drugs

5. Others (State)

10. What factors influence your dosage of drugs?

1. age

2. weight

3. cost of treatment

4. side effects

5. standard treatment guidelines

6. All of the above

7. None of them

10. Do you often prescribe injections to your patients?

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Ye.....1

No.....2

If no skip to question 11

11Why?

1. They are more effective
2. Patients like them
3. They are always available in the facility
4. Others (State)

12. How many of the drugs you prescribe are on the essential drug list

For example malaria.....

For example pneumonia.....

13. If yes why?.....

14. Do you receive training for prescribing?

Yes.....1

No.....2

If no skip question 15

15. When was the last time you attended a training session on prescription?

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1. Last week

2. Last month

3. Last quarter

4. One year ago

5. Others (specify)

16. Which areas of training are most useful to you?

1-diagnosis 2-treatment 3- prevention 4-N/A

THANK YOU

Appendix 3: FACILITY AUDIT – LAWRA DISTRICT

Consent /General Information

FIND THE MANAGER OR MOST SENIOR HEALTH WORKER RESPONSIBLE

FOR MANAGING THE FACILITY. INTRODUCE YOURSELF AND READ THE FOLLOWING:

I am a student of the school of Public Health of the University of Ghana, Legon. In doing my MPH dissertation, I am collecting information on how providers prescribe at health facility

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level in the district. This information will be useful to the facility and DHMT in planning your health service delivery. This part of the survey will review general management

at the facility, staffing levels and practices in relation to prescribing practices. It will

take between 20-30 minutes to complete. All information from this survey is confidential. You can refuse to answer any question and no identifying information on respondents will be collected. I am asking for your help to ensure that the information collected is accurate. If there are sections where someone else is the most appropriate person to provide information, I would appreciate your introducing me to that person. If you have any further questions about this survey you can contact Dr Robert Amesiya, phone number 0203692300 or Dr Reuben Esena, phone number 0277220276.

Do you have any questions for me? Can we begin now ?

SIGNATURE OF INTERVIEWER.....

INDICATES PARTICIPANT AGREEMENT TO PARTICIPATE.

Name of sub-district _____

Name of the facility_____

Type of Health Facility : (1= Hospital; 2 = Health

3= Other ____)

INTERVIEWER CODE.....

Date:...../...../.....

DAY /MONTH/YEAR

Name of the interviewer_____

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1.Is there a trained health provider present to prescribe at the facility at all times (24 hours/day)

Yes.....1

No.....2

Now I have some questions about the staff. I want to know the highest technical qualification and the number of staff who are routinely assigned for services. This include staff who provide outpatient services but **NOT** staff who function purely administratively or under training.

2. How many professionals do you have prescribing at the OPD?

Doctors.....

Medical assistants.....

Midwives.....

Nurses.....

Others.....

3. Does this facility have formal meetings to review prescribing issues?

Yes.....1

No.....2

If no, skip to question 6

4. How often are these meetings held?

BI-MONTHLY.....1

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MONTHLY.....2

QUARTERLY.....3

SEMI-ANNUALLY.....4

ANNUALLY.....5

OTHER.....6

N/A 7

5. Is an official record of meetings maintained?

Yes.....1

No.....2

IF YES, ASK TO SEE SOME DOCUMENTATION(MINUTES/NOTES) FROM THE MOST RECENT MEETING

6. Does this facility have a Quality Assurance Team?

Yes.....1

N0.....2

7. Does the team have a Quality Assurance Action Plan? IF YES, ASK TO THE PLAN OR EVIDENCE OF RECENT ACTIVITY

YES, PLAN SEEN.....1

YES, NO PLAN SEEN.....2

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NO.....3

8. Are any of the following methods for quality assurance used? IF YES, ASK TO SEE SOME

DOCUMENTATION (REPORT/ MINUTES/ ETC). FOR THE METHOD IMPLEMENTATION.

Mortality meeting Yes.....1 No.....2

Periodic audit of medical records or service registers. Yes.....1 No.....2

Regional/Dist. Health Management Teams Visits' feedback? Yes.....1 No.....2

Clinical Conferences/Meetings? Yes.....1 No.....2

Others specify.....

9. How many staff have been trained in rational prescribing?

1. One

2. Two

3. Many

4. All

5. Don't know=98

10. How many staff have copies of standard treatment guidelines?

1. One

2. Two

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3. Many

4. All

5. Don't know=98

11. In your view, what are the three biggest problems facing this facility related to prescribing?

1. Unqualified staff prescribing

2.High patient load

3.Unavailability of essential drugs

12. What specifically would you do to solve these problems

1.Lobby for more qualified staff

2.Improve drug supply

3. Educate prescribers

4. Others (specify)

THANK YOU.

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