KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF MEDICAL SCIENCES

DEPARTMENT OF COMMUNITY HEALTH

A REVIEW OF HEALTH MANAGEMENT INFORMATION SYSTEM IN THE KUMASI METROPOLIS WITH RESPECT TO OPERATIONS IN THE PHARMACY DEPARTMENT

A THESIS SUBMITTED TO THE BOARD OF POST GRADUATE STUDIES

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR Msc. DEGREE

IN HEALTH SERVICES PLANNING AND MANAGEMENT

BY

Mercy Naa Aduele Opare-Addo (Mrs.)

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HEAD OF DEPARTMENT

DR S. A. AKOR

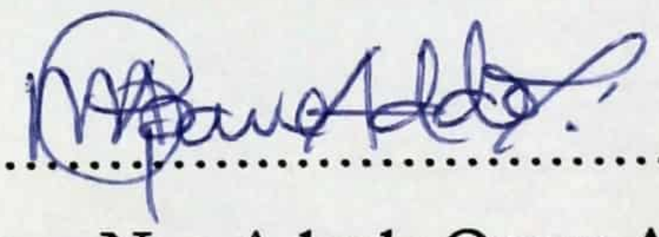
SUPERVISOR

DR E. N. L BROWNE

DECLARATION

I hereby declare that, except for references to other people's works which have been duly acknowledged, this work is the result of my own original research

I hereby also declare that, this work has neither in whole nor in part been presented for degree elsewhere.

Student ..... 

Mercy Naa Aduele Opare-Addo (Mrs)

Project Supervisor .....

Dr. E.N.L. Browne

Head of Department .....

Dr. S.A. Akor

DEDICATION

THIS THESIS IS DEDICATED TO MY FAMILY

ACKNOWLEDGEMENTS

I wish to express my gratitude to Dr. E.N.L. Browne my supervisor, who through his encouragement, guidance, useful criticism and suggestions has helped in producing this work.

I also express my profound appreciation to the Kumasi Metropolitan Health team especially Dr (Mrs) .A .A Bonney (field supervisor) the Director, for her guidance and suggestion through out the field work.

I also owe a debt of gratitude to Mr. K. Baryeh for his encouragement and guidance through out this work, and to all my lectures at the department of Community Health, and my classmates I am most grateful for their invaluable assistance.

To my husband ,Dr H. S. Opare-Addo and my children Addow, Asamoah, Ampim and Obeng, I say thank you for the encouragement and support though out this programme.

Finally I am most grateful to the Almighty God by whose wisdom and grace this work has been completed.

ABSTRACT

Health information systems are designed to produce information for decision-making and to enable management ascertain the progress made by an organisation towards achieving its objectives. It aids in allowing optimal utilisation of resources, in planning for better intersectoral co-ordination, and in monitoring and evaluation of activities.

Information systems are thus a potent tool of management and also essential for initiating programmes in any field.

An observation of HMIS in the Kumasi Metro revealed that HMIS was tilted in favour of MCH/FP activities with little attention to HMIS in the pharmacy. The study therefore assessed the HMIS in place within the pharmacy department and made recommendations in order to improve HMIS in the pharmacy department ,and to improve health care delivery in Kumasi and Ghana as a whole.

A hypothesis was proposed as 'The HMIS in the pharmacy departments in the Kumasi metropolis is inadequate to make it operational'

Specific areas of interest in the study included assessing the adequacy of data collected for analysis:

- Finding out when data were submitted to the Kumasi Metro Health Directorate and how data were stored:
- Finding out what data collected in the pharmacy department were used for at both the sub Metro and Metro levels:
- Finding out if there was any feedback process in the system.

A qualitative descriptive study design was used . Validity of data collected was checked using the face validation method.

The study was conducted in three out of the five MOH hospitals in the Kumasi Metro excluding Komfo Anokye Teaching Hospital. The three study hospitals were chosen by simple random sampling, these are Manhyia Hospital, South Suntreso Hospital and Maternal Child Health Hospital. The study population consisted a Medical Superintendent, the Pharmacist and a data collector from each of the three facilities. They were interviewed with the aid of a structured interview guide. The Metro Health Director (MHD) was also interviewed.

As part of the study all four returns (Cash and carry, stock level, Anti Snake-bite Serum (ASS) and Anti Rabies Vaccine (ARV) returns) for 1999 prepared in the pharmacy department were collected and analysed.

Findings at the facility level showed that adequate data were collected and expected returns were submitted although there was no uniform format for collecting data at the dispensary at the different hospitals. Returns were submitted on monthly basis, submissions were always late, however date of submission could not be obtained.

Data was stored manually and computers were under-utilised. Retrieval of information was cumbersome in MCHH and South Suntreso where files containing data were not well labelled.

At the facility level data was analysed by way of aggregation of data collected on daily basis. Other indicators on cash and carry forms were however not analysed and the feedback system was inadequate. Cash and

carry, ASS and ARV returns were not used in monitoring, evaluation and in decision-making.

They were being prepared mainly for submission to the MHD. However stock level returns were utilised in the day to day running of the pharmacy.

At the Metro level returns submitted by facilities were not analysed. There was no feedback system in place with respect to returns submitted from the pharmacy department. Returns were just collated for onward transmission to the region.

Comparing the study results with the theoretical framework it was observed that raw data is collected and processed into indicators but is not being used for decision-making . hence there is a break in the management information stages. The hypothesis, 'The HMIS in the pharmacy departments in the Kumasi metropolis is inadequate to make it operational' is therefore confirmed.

For the system to become operational, an efficient supervision and monitoring system will have to be put in place at both the facility and Metro level. It will also be important to train all health workers on basic concepts and relevance of an efficient HMIS .

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LIST OF ABBREVIATIONS

ARV	Anti Rabies vaccine
ASS	Anti Snake-bite Serum
CHS	Centre for Health Statistics
DHMT	District Health Management Team
DMIS	Drug Management Information System
GNDP	Ghana National Drug Programme
HIS	Health Information System
HMIS	Management Health Information System
KATH	Komfo Anokye Teaching Hospital
MCH	Maternal and child health
MCHH	Maternal and child health hospital
MIS	Management Information System
MOH	Ministry of health
MSH	Management Science for Health
P.H.C	Primary Health Care
WHO	World Health Organisation
MHD	Metro Health director
MHA	Metro Health Administration (Metro)
RHMT	Regional Health Management Team

CHAPTER ONE

INTRODUCTION

The Government of Ghana is committed to improving the health of all people living in the country regardless of age, sex, ethnic origin, religion, political beliefs or socio-economic standing. The Government also recognises that good health is both a cause and a consequence of economic success. It is in this regard that Ghana has adopted the Primary Health Care (PHC) concept (MOH,1999). In order to achieve the goals of Ghana vision 2020, an effective and efficient health system is necessary.

The district is the key level for the management of PHC. Ideally, all health related activities taking place in the district should be co-ordinated into a district health system and managed by a District Health Management Team (DHMT) (Vaughan & Morrow, 1989).

An efficient management of the PHC system is particularly based on appropriate and relevant health information, as this is essential for the management of the health delivery system.

Appropriate information is a prerequisite for health facilities to function effectively.

Decision-makers and staff in health facilities, as well as community members all need information in order to develop critical awareness if they are to engage in locally motivated and independent actions (WHO, 1997).

Information systems are thus a potent tool of management and also essential for initiating any programme in any field (Khohar ,1992). To facilitate development of the managerial processes, it is indispensable that governments set up, develop or strengthen their information systems for the management of national health programmes (Mutombo, 1984).

Campbell (1997) defines health information systems (HIS) as an organised system of record keeping, reporting, processing, analysis, use and feedback of information. The system is designed to provide different levels of beneficiaries (clients, community managers, planners, policy makers) with timely and relevant information to formulate policy, plan, implement, monitor, supervise and evaluate health programme activities.

A basic information system therefore deals with the procedures of collection and collation, analysis, reporting, storage and retrieval of required data. It is necessary that mechanisms should be put in place to be able to check on accuracy of the data collected, and the retrieval of the data (Khokar, 1992). As this would serve as a guide to management in deciding which services should be expanded, reduced or dispensed with.

HMIS also improves communication, allows optimal utilization of resources, aids in planning for better intersectoral co-ordination, evaluation of products and services and ultimately improves health services.

It has been found that most countries suffer from an abundance of unanalysed data with limited relevance to strategic planning and to the management of health services and programmes. It has repeatedly been said that informatics in health, especially in developing, countries, cannot be regarded as an isolated discipline and technology. However it must be viewed as an integral and essential element of the managerial process for national health development (WHO, 1988).

One of the main sources of data coming into a health information system is that concerning patients. It is essential that the system assists and interests clinicians by feeding back to them information that facilitate the study of clinical problems. Since the information given could influence their prescribing habits (Khokar, 1992).

However, the current status of information system in most developing countries shows shortcomings and inadequacies at all levels. There is both excessive and irrelevant collection of data or there is too little information available in time for making rational decisions (Khokar,1992).

A well-designed health management information system should assist the health care managers at different levels by making available the baseline data at most peripheral levels.

A planner with a confident grasp of information is in a strong position to convince others of his \ her case. Thus, anyone involved in the planning process cannot afford to underestimate the importance of access to, and familiarity with information (Green, 1994).

As part of the PHC concept, efficient pharmaceuticals including vaccines, pills capsules, and many other drug products are required. Their importance for primary health programmes must be recognised in light of the following four observations,

- drugs improve health
- drugs promote trust and involvement in health services
- drugs are costly
- substantive supply improvements are feasible (CPA,1995).

Most leading causes of death and disability in developing countries can be prevented, treated or at least alleviated with cost effective and essential drugs.

The MOH (1998) has indicated that one of the tools for the management of drug supplies is MIS. MIS will measure utilization and stock management especially at regional \ district level and provide information to assess rational use of drug.

The system will specifically support in the provisioning, budgeting and procurement procedures at the regional and district level and also provide a scientific basis for national qualification.

In developing countries, the economic impact of drugs cost for government programmes is immense, often representing as much as 40% of health care budgets (MSH,1997).

The availability and effectiveness of drugs is a key factor in generating and maintaining public interest and participation in health related activities. Credibility of health workers depends on their ability to bring an end to the patients problem. Thus, the critical decisions about what drugs to procure, what quantities to stock and how to distribute them should be based on adequate and complete information.

1.1 PROBLEM STATEMENT

As part of the 5 –year Medium Term Health Strategy of Ghana, the MOH instituted the Ghana National Drugs Programme (GNDP) in 1997 with the aim of ensuring that all people in Ghana have assess to effective safe and affordable drugs of good quality, in both the public and the private sector (MOH,1999). The programme has as its objectives the promotion of rational drug use, strengthen quality assurance, improve the financing system of drug procurement and improving the drug supply system . An efficient information system is required to achieve these objectives. However several attempts have been made at reviewing and improving the HMIS, yet lack of information continues to be the frequent complaint of decision makers. A review of the information scene shows that the Ministry currently lacks adequately organised repositories of information as well as information processing capacity at all levels (MOH,1998). An observation of HMIS in the Kumasi Metro (Metro) reveals that HMIS is heavily tilted in favour of MCH/FP activities with little attention to HMIS in the pharmacy department. Hence the need to review the HMIS in the pharmacy department.

1.2 RESEARCH QUESTIONS HYPOTHESIS

- How relevant and adequate are data collected in the pharmacy departments in the sub- Metros?
- What are data collected in the pharmacy departments of the facility used for?
- Are data collected sent to appropriate quarters on time, and where are data stored?

- Are data collected analysed to produce meaningful information to guide decision-making in the sub-Metros?
- Is there a monitoring and feed back system in place.

1.3 HYPOTHESIS

' The HMIS in the pharmacy departments within the Kumasi metropolis is inadequate to make them operational '

1.4 OBJECTIVES

General objective- To assess the health information system of the pharmacy department in the Kumasi Metropolis.

Specific objectives

- To assess the adequacy of data collected for analysis in the pharmacy department.
- To find out when data are submitted to the Kumasi Metro Health directorate from the pharmacy department and how data are stored.
- To find out what data collected in the pharmacy department are used for at both the sub Metro and Metro levels.
- To find out if there is a feedback process from metro to the pharmacy department in place.
- To make recommendations to the facilities and to the Kumasi Metro Health Directorate to improve HMIS for decision-making.

METHODS

Study type, Variables and Data Collection Techniques

type- the study is a descriptive study

1.1 Variables

Variables	Indicators	Scale of measurement Min	Max
ype of returns tted	Cash and carry returns Stock level returns ASS returns ARV returns	0 " " "	5 " " "
equacy of data cted	Quantity of drugs issued Cost of drugs Receipt no. of receipt issued Name of drugs dispensed Age of patient >70	0 " " "	5 " " "
neliness	Before deadline --- early After deadline ---late		5 0
rage	Manual	0	5
alysis		0	5
fulness of data cted	Monitoring Performance review Decision- making Submission to high level	0 " " "	5 " " "
edback		0	5

igned by author

for measurement of variables /indicators and their respective score.

ent - 5

ge - 2.5

- 0

Data collection techniques

Observations together with a structured interview guide was used in interviewing certain category of staff, the Medical Superintendent, the Pharmacist in-charge, and one data collector to obtain data concerning how the HMIS in their respective Hospitals was being managed. Official records, routine data collected in the pharmacy department and minutes of meetings were reviewed to also obtain information on how data was being stored and being utilised.

1.5.2 Sampling

10 persons were interviewed, 1 medical superintendent, 1 head of the pharmacy department and 1 data collector in the pharmacy department, from each of the three hospitals in the metropolis. The Director of the Kumasi Metropolis Health Services was also interviewed. Sampling type was purposeful sampling because key informants were selected. Selection of the three hospitals was however by simple random sampling.

1.5.3 Plan For Data Collection

a. For ethical consideration, permission was sought from the Kumasi Metropolitan Director of Health Services to proceed with the study. Permission was also sought from the medical superintendent the head of the pharmacy department for each of the three facilities.

Logistics such as stationary and fuel were provided by the researcher.

Data was collected by the principal investigator. Copies of January to December 1999 returns submitted to Metro from the pharmacy department were collected.

Structured interview guide was used to interview all 10 members of the sample.

Secondary data were reviewed at all facilities. The principal investigator ensured that quality was maintained throughout the study period, this was maintained by principal investigator being the only one administering the questionnaire. All forms were also reviewed at the end of each day to check on its completeness.

b. Data Handling

Data collected was stored on numbered printed forms and stored in a file based on facility level when on the field. Completed forms were numbered and stored in a file sequentially.

1.5.4 Plan For Data Processing and Analysis

Results from the study were mainly descriptive and qualitative. Tables were prepared using the variables in 1.4.1 and scores allocated based on survey results.

Analysis of 1999 returns was done using Microsoft excel1997.

1.5.5 Pre – Test

A pretest was conducted to test the data collection tools and analysis procedures at the Tafo Hospital. Certain questions had to be reframed or changed because of wrong interpretation and difficulty of understanding.

1.6 SCOPE OF STUDY

The HMIS in the pharmacy department of three out of five hospitals in the Kumasi metropolis were studied.

The study focused on the four monthly prepared in the pharmacy department. Returns. These are the cash and carry returns, stock level returns, anti rabies vaccine (ARV) returns and anti snake sera (ASS) returns.

RATIONALE FOR THE STUDY

Drug management forms an important component of the health delivery system. It is therefore necessary that the drug management cycle that involves the processes of selection, procurement, distribution and use be dependent on an effective information system.

Although the health sector reforms of Ghana recognise that quality information is essential for effective planning, management and policy development and as such see it as a fundamental prerequisite for any reform programme (MOH, 1997). Poor information management in the health sector has been the subject of several reviews, development and improvement programmes in recent years. There is therefore the need to strengthen the use of information for local decision making because of the increasing decentralisation of management functions and resource allocation to the districts. As it is also known that a well developed information system supports decentralised decision-making at the district and sub district levels.

An effective HMIS within the pharmacy department would therefore be able to synthesize the large volume of data generated by drug management operations. Information generated can then be used in planning activities, estimating demand, allocating resources and monitoring and evaluation of drug programmes.

1.8 BACKGROUND INFORMATION OF STUDY AREA

The Kumasi Metropolis is Ghana's second city and is about 300 km from the national capital, Accra. It is centrally located in the Ashanti Region (latitude 06 45'N, Longitude 01 37' W) . It is the largest of the 18 political districts in the region. Kumasi is the capital of the ancient Ashanti Kingdom and Ashanti Region. Kumasi covers an area of about 2,086 km^2 and has common boundaries with the following districts: Kwabre to the North, Bosomtwe Atwima Kwanwoma (BAK) to the South, Atwima to the East and Ejisu-Juaben to the West.

1.8.1 Population:

Kumasi has population of 1,017,246 with an annual growth rate of 2.6% (Ghana Statistical Service,2000). During the day, it is estimated that the population swells up to about 2million . In terms of the sub- metropolitan areas, the population distribution is as in Table 1. 2 below:

Table 1. 2 Population Distribution : Sub-Metro Health areas.

Sub-Metropolitan area	Total Population	% of total
1. Manhyia South	295001	29%
2. Asokwa	284829	28%
3. Bantama	203,449	20%
4. Manhyia North	162,759	16%
5. Subin	71,207	7%
KUMASI	**1,017,246**	**100%**

Source –computed by author(using population & housing census-2000)

Table 1. 3 Demography of Kumasi Metropolis 2000

CATEGORY	POPULATION	% of population
Children 0-11 months	40,689	4
Children 12-23 months	40,689	4
Children 0-59 months	203,449	20
Children 6 – 18years	274,656	27
Women 12-44 years (WIFA)	203,449	20
Expected pregnancy	40,689	4
Expected Births	40,689	4
Men and Women 60+ years	81,380	8

Source –computed by author(using population & housing census-2000)

1.8.2 Climate and Vegetation:

The climate is typical wet equatorial with a major rainy season from late February to early July and a minor season from mid September to early November. Annual rainfall varies from 3.6 mm in January to 152 mm in June Average temperature ranges from 20°C (January) to 35°C (March). The vegetation is semi-deciduous forest with several trees of economic value.

1.8.3 Topography:

Kumasi has an average altitude of 29m. The metropolis rises northwards (Mampong Scarp) to about 350m above sea level.

The original plateau on which Kumasi is situated has been eroded over the years to give the present dissected upland feature of the city.

Two prominent ridges of 75m and 310 m exist along the southwestern and eastern boundaries respectively. Several streams divide the metropolis and drain into four main drainage basins: Kwadaso, Subin, Aboabo and Sisai/Wiwi. The Sisai/Wiwi basin occupies the largest area and drains the western part of the metropolis. The drainage and topography of the metropolis facilitate liquid waste drainage throughout the city.

1.8.4 Political Administration

Administratively, the metropolis is divided into four sub-metropolitan areas Asokwa, Manhyia, Bantama and Subin. The Kumasi Metropolitan Assembly is the highest political authority in the metropolis. It is headed by the Metropolitan Chief Executive (Mayor of Kumasi) and comprises elected and government appointed members and heads of decentralised MDAs

1.8.5 Health Administration

The metropolitan health services are organised around five sub-metropolitan Health Teams: Manhyia South (Manhyia hospital), Manhyia North (Old Tafo hospital), Asokwa (Kumasi South hospital), Bantama (South Suntreso hospital) and Subin (Maternal and Child Health hospital), which function under the Metropolitan Health Directorate (MHD).

The metropolis has a – 13 member core Metropolitan Health Management Team (MHMT). The team is headed by the Metropolitan Director of Health Services (MDHS).

The other members of the core group are heads of the following units: Nutrition, Environmental Health, Biostatistics, Health Education, Disease Control, Finance, Transport, Administration, Maternal/ Child health ,School Health, Store and Supplies ,and Pharmacy. Ten members (77%) of the core MHMT (the MDHS inclusive) are based at the Metropolitan Health Directorate (MHD) which is located in Subin, near the offices of the KMA.

The core group holds a weekly meeting every Friday, 9-10 am at the MHD to discuss on health issues in the Metropolis.

1.9 Profile of Diseases in Kumasi Metropolis.-January- June 2000

Table1.4 Ten Top Diseases in Kumasi Metropolis.- January- June 2000

No.	DISEASES	No of Cases	% of Total
1	Malaria	46948	46.6
2	Urinary tract infection	8491	8.4
3	Diarrhoeal diseases	4545	4.5
4	Diseases of skin	4466	4.4
5	Accidents (including burns)	2652	2.6
6	Hypertension	2261	2.2
7	Intestinal worms	1567	1.6
8	Measles	1202	1.2
9	Anaemia	1010	1.0
10	Rheumatism, Joint Pains	960	0.9
11	Others	2652	2.6

Source:1st half Metro health report—2000

10 HMIS IN THE MINISTRY OF HEALTH

The current health reforms and changing health care environment requires timely and health planning, demanding innovative strategies to respond to efficiency and quality concerns.

HMIS in the MOH therefore plays a central role in guiding efficient and effective health care delivery. Especially with the widening gap between increasing demand and scare resources available in the health sector.

The design of HMIS is based on three main principles, which include analysis, decision –making and reporting. Behind these principles is the recognition of the fact that each level of the health care system assumes responsibility for major

aspects of service delivery under the current reform programme. It recognises that lower levels will develop and implement action plans with higher levels overseeing the implementation and monitoring performance of various units.

Another basic concept of HMIS in the MOH is the recognition of the responsibility of every management unit for the collection and analysis of basic information for day to day management decision. (MOH ,1998). It is expected that data recorded at each level must first and foremost be of use to the staff and management at that level.

In the pharmacy department HMIS measures utilisation and stock management especially at the district level and provides information to assess rational use. The system specifically supports in the provisioning, budgeting and procurement procedures at the district level and provides a scientific basis for national quantification exercises (MOH, 1998). The system in the pharmacy departments follows a three tier system, data collectors in the pharmacy departments submit data returns to the head of pharmacy department who collates and analyses data from the data collectors and submits returns on their own health related activities together with those from the data collectors to the management board of the facility and the MHA , for collation and analysis and for use in their management functions. MHA also submits summary data returns and analysis to the RHA. After collation and analysis of data returns they are then submitted to the national level for use in drug management activities.

CHAPTER TWO

LITERATURE REVIEW

2.1 Basic Concepts of Management Information Systems (MIS)

Management Information Systems (MIS) is an integrated approach for providing interpreted and relevant data that can help managers make informed decisions. MIS should interprete, organise and filter data so that they reach managers in an efficient and timely manner (Khokar, 1992).

Khokar (1992) further describes MIS as one that enables management and strategic planning to interact with individuals and their decision-making processes at different levels of an organisation.

The design of the Health Management Information System (HMIS) is based on three main principles which include analysis, decision- making and reporting (MOH,1998). Behind these principles is the recognition of the fact that each level of the health care system should assume responsibility for major aspects of the service delivery, and for the management unit to also recognise that it is its' responsibility for the collection and analysis of basic information for day to day management decisions .

It is necessary that, for managers to value information for decisions making, four basic qualities or characteristics must be met.

These are

1. Relevance- involvement of managers in the design of monitoring and evaluation system is implied.
2. Timeliness -submission on time when needed
3. Accuracy -not falsified
4. Usability-intelligibly presented (Lucey,1992).

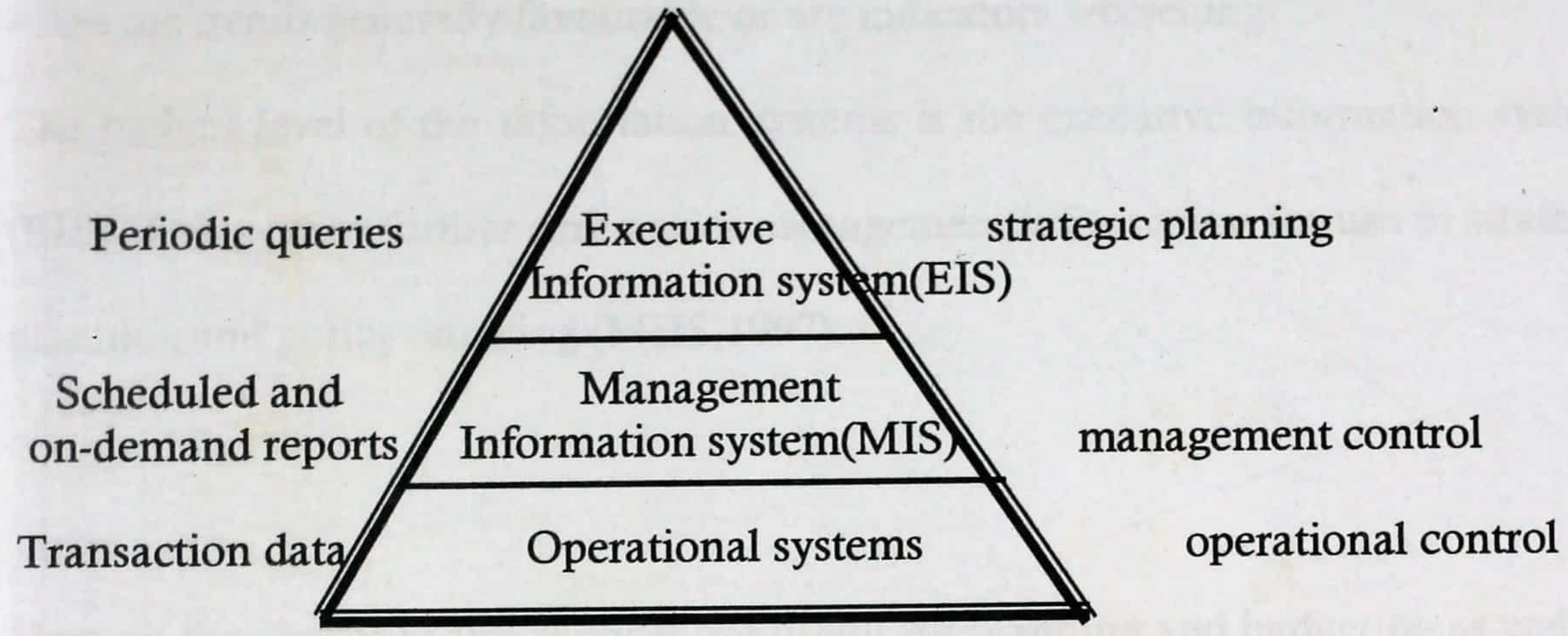
A health information system according to Lippeveld et al (1997) comprises an information process and a management structure. Designing or redesigning a HIS requires systematic attention to each component – the information process and the management structure, the aim being to provide specific information support for the decision - making process in the health service system at large.

According to WHO (1996), in designing a Drug Management Information System (DMIS) it is necessary that forms to be filled should be available and all staff should be trained to use these forms before drugs start moving through the system. WHO (1996) is also of the view that good information systems also include procedures to govern the use and flow of information up and down the drug supply network. Without this preparation, recording of drug consumption and forecasting of drug needs, quickly breaks down.

A typical component of a drug management information system are record – keeping documents, data reporting forms, feedback reports. Copies of forms filled at various points in the distribution network help form the audit trail for tracing the flow of drugs and funds (MSH,1997).

An information system pyramid as shown in fig 2.1.is helpful in explaining what a Management Information system(MIS) is made off.

Fig 2.1 : Information System Pyramid



Adapted from MSH,(1997).

At the base of the pyramid are operational information systems. These include sub systems such as procurement, distribution, financial management and drug use – which handles data at the transaction level.

Every item that moves in and out of inventory must be tracked, and decisions must be made about how much to supply to a health facility , when to record and how much to bill. This operational level is characterised by a high volume of data that must be recorded and processed, usually daily. Management information systems (MIS) forms the next level of pyramid. This typically provides summaries of operational data on a periodic basis, e.g. on monthly or quarterly basis to help managers of specific departments monitor their performance. Information provided by the MIS helps manages answer question such as

- How does expenditure compare with the budget in Central Medical Stores (CMS)?

- How effective is the inventory control system in eliminating stock-outs and cutting stock losses?
- What is the delivery performance over the last period?
- Are the trends generally favourable or are indicators worsening?

The highest level of the information systems is the executive information system (EIS). This system further summaries management information for use in strategic planning and policy –making (MHS,1997).

Data on the cost of health services are useful for planning and budgeting as well as for determining the efficiency of the services. They are however often not available. Accurate information on the cost of providing health centre based primary health services, is urgently required for detailed review and analysis (WHO,1997).

A good drug supply management system is an essential component of the health delivery system (WHO,1998). To perform the functions of the system (selection, procurement, distribution and use), the logistics system must have certain resources, among them is an effective information system. Such a system have reliable data on public health conditions, consumption rates, and quantities of drugs to stock that aid health officials, decisions –makers technical advisors and staff supervisors to make decisions (MSH,1992). Among the decisions which managers of health facilities have to take in drug management using an adequate MIS is financing and supply of drug and future and current drug requirements.

An effective DMIS therefore is able to synthesise the large volume of data generated by drug management operations.

It then reduces the data to information for use in planning activities, estimating demand, allocating resources and monitoring and evaluating drug management operations. Two important function of a DMIS is to improve accountability and to create a paper audit trail for products as they enter or leave the drug supply system.

In a DMIS, data are routinely collected on a common set of indicators, usually expressed as proportions or rates. These indicators measure performance towards objectives (MSH,1997).

A good DMIS alerts staff to problems and triggers critical actions from all levels. Usually, this means that there is not a strict separation between data collectors and information users. Analysis and use of data are encouraged at every level (Millar,1993).

2.2 Data collection

Khohar (1992) and de Kadt (1995) are of the view that the need for information should be discussed with all the categories of health workers. Health workers need to be taught not only how to fill forms correctly but also how the information provided can and does improve work. Institutions must therefore ensure that field workers have the training and the ability to collect and transmit appropriate data to the relevant levels.

Furthermore they should be familiar with,

- what data are needed at given levels,

- who generate them and in what form,
- how to arrange and summarise,
- in what forms they should be reported to higher levels,
- what system should be designed for storage and quick retrieval (Lucey 1992).

According to MHS (1997), a combination of registers, ledgers and filling systems are used to maintain data about the activities of a specific organisations' data unit. An efficient record keeping system also enables its users to quickly retrieve information about activities and simplifies the job of aggregating data for reporting purposes.

According to Shanta (1997), Lippeveld (1997) and Bodart and Sapirie (1998) information gathered should be user- oriented and designed to meet the needs of service management.

Much information collected also depends heavily on both the skills of the collector and how she /he views or interprets reality, as the level of motivation of the data collector and his training can affect the accuracy of the information (Green-1994).

WHO (1997), also states that the quality of data used at health centres will improve, when local staff involved in data collection are also able to analyse and interpret them for subsequent use in making decisions. It further reports that much more effort should be directed to provide health staff with training and orientation needed for the collection of relevant and reliable data, their analysis and interpretation ,as well as utilization for decision making to and improved delivery of health centre service.

Green (1994) is of the view that an efficient information system should routinely collect only that information for which it can see a use in improved decision – making. The quality and quantity are also essential ingredient of valuable information, the better the quality of information, and the greater the quantity of the information, the likelihood that a correct decision will be made.

2.3 Timeliness of data / information

Lucey (1992) reports that research studies indicate that a major source of dissatisfaction with information systems is the arrival of information too late to be used effectively. The more formal the information system the greater the care which needs to be taken to ensure timely arrival. Lucey (1992) further states that with information systems involving feedback and control processes timing is the critical factor. The late arrival of information may cause control action to be totally inappropriate for current conditions.

It is therefore necessary that the whole process of gathering raw data, processing, information production and communication must be minutely scrutinised to cut out delays and reduce the time lag between event and information. The issue of timeless is of most importance in the system (Schware, 1998). Two potential bottlenecks usually threaten timely receipt of information, the speed with which data can be aggregated and reports prepared at the reporting nodes; and the speed with which reports are transmitted from one level to next (Lippeveld et al, 1997).

2.4 Storage and Retrieval

The accessibility of information i.e. the ease of retrieval is an important factor in all information systems. Undue difficulties (e.g. complicated request forms, delays, complex coding system etc) make retrieval by the manager more difficult and cumbersome and makes it more likely that the manager will avoid using the formal information systems and substitute his own, perhaps less efficient and objective system (Lucey,1992). Khokar (1992) states that there is too little information available in time for making rational decisions, this he attributes to inadequate storage devices, that make tracing and retrieving of information problematic.

2.5 Analysis

The transformation of raw data into useful information according to Ankrah et al (1996) is analysis. During analysis, data are converted into summary figures by counting and calculations. Data could be analyzed and presented as numbers, rates and proportions (Ankrah at al, 1996).Each level in the Health Care System should perform some analysis on the data it collects, geared to its own specific needs (MOH -Zambia, 1996).Pran and Darko (1993) also recommend that the practice of Centre for Health Statistics (CHS) receiving the bulk of raw data from health institutions should cease. Data must be summarised and partly analyzed at the district and regional levels before reaching the CHS.

MOH - Zambia, (1996) are also of the view that in a highly centralised health care system the appropriate approach is to collect and send raw or even aggregated data to higher levels. However in a decentralised health care system the appropriate

approach is to collect and send raw or even aggregated data to higher levels . However in a decentralised health care system, simply forwarding information to another level does not work.

They further explain that DHMT consolidates health centres and hospital plans in one operation and monitors performance hence the need to do some analysis.

MSH, (1997) also reports that data processing can take many forms ranging from simple data aggregation by district calculation of averages or trend analysis over time to the use of sophisticated statistical techniques such as analysis of variance. The objective here is to reduce large amounts of data to a manageable amount, often using summary tables. It is important to remember that a computer is not necessary for data processing however it is appropriate to keep in mind the adage, if you can do it by hand, the computer might do it more efficiently, but if you cannot the computer is likely to make it worse.

2.6 Feedback

Feedback is another critical component of HMIS. The aggregation tools completed by a higher level are sent to lower levels to allow comparison with other reporting units. According to Schware (1998), the success of any management system is heavily dependent on feedback on the data collected, which ideally provides incentives for providing accurate up to date data. He further explains that it is extremely important to spend time and energy on the feedback process interpreting data summarises to those who provide and collect it particularly at the community level.

MSH (1997), also reports that feedback reports have two main purposes: to address issues highlighted by status reports, and to analyse how each reporting unit has performed relative to the units that first collected and provided the data. Experience has shown that regular and useful feedback is one of the best ways to improve data quality and reporting compliance. Once staff see that their data are being used they become much more conscientious about data collection. It is reported that health staff collect data that are sent on to some higher authority, and they receive no feedback as to the significant finding and the use to which they are put. Thus health staff pay little attention to the accuracy and completeness of the routine data they collect

2.7 The Relevance of Management Information Systems

It is generally known that appropriate and relevant health information is essential for the management and maintenance of the health system. Khokar (1992) and MOH (1998), state that an effective information system helps to

- understand and define community needs in a better way,
- know what services should be expanded or reduced or dispensed with,
- efficiently allocate resources to meet needs of a community,
- manage and monitor resources including human resources,
- set targets and monitor achievements in the area of service coverage and quality of care,
- provide quick and easy access to information,
- control epidemics and other emergency situations,
- plan for better intersectoral co-ordination,
- improve communication,

- identify what kind of assistance is needed at different levels.

According to Shanta (1998), like every planning process, health planning requires reliable information which is useful in evaluating services, anticipation of needs of communities and assessing improvement in health services. HMIS also provides information to assist each level of management, within an organisation in fulfilling two responsibilities. These are,

to ensure that managers and practitioners at it's periphery are observing the standards set for their institutions and services.

to plan and deploy its own resources in the most cost-effective manner possible to accomplish its objective (MOH of Zambia ,1996).

Correct and valid information can aid efficient and effective planning and management of available resources and hence information is a vital resource, and is the domain of monitoring and evaluation. WHO (1988), reports that an effective HMIS enables management to monitor performance, and systematic monitoring depends on having performance standards or targets. To determine whether adequate progress is being achieved it is necessary to know what is expected. Indicators help measure changes directly or indirectly and assess the extent to which the targets and objectives of a program are being attained. Indicators used to make measurement at one point in time allow a manager to compare a program's performance with a target level of performance, and to identify areas of relative strength and weakness. When indicators are applied over time they can be used to set and monitor performance improvement targets such as:

Monitoring implementation of program plans and work plans.

Identifying relative strengths and weakness in current policies and system.

Measuring the impact of new policies or management systems.

Self-monitoring to improve performance.

A performance target is a durable and in principle attainable standard of performance (MSH,1997)

The purpose of inventory control at the facility level is to:-

- Record the receipt and issuance of stock
- Maintain sufficient stock to last between deliveries
- Maintain stock at the best possible cost, and within budget limits.
- Provide appropriate, safe and secure storage
- Prevent expiry of drugs (ibid).

A sufficient stock of items at a health facility has many benefits. Patients receive drugs promptly, and stock-outs can be prevented even when deliveries are delayed. Supplies can be replenished at scheduled intervals, saving on administration cost and transport time (Millar,1993).

Poor inventory control however leads to wastage or increased cost for holding stock. Overstocking of certain items may tie up a substantial portion of the drug budget, leaving insufficient funds for other important, perhaps life saving drugs. Overstocked drugs often expire and poor storage conditions may result in spoiled stock (ibid).

MOH (1998), reports that the need for HIS in Ghana is to,

- assess individuals or institutional performance in terms of coverage of the catchment area,
- assess quality of the service being provided, thus effectiveness of different strategies,

- compare performance over time, with other health facility or against local developed \nationally \regional established targets,
- To identify health facilities that is in need of support and supervision,
- Monitor trends in coverage quality and effectiveness in order to guide policy development, planning and budgeting,
- Improve the overall effectiveness of the Health system.

2.8 Constraints of Management Information Systems

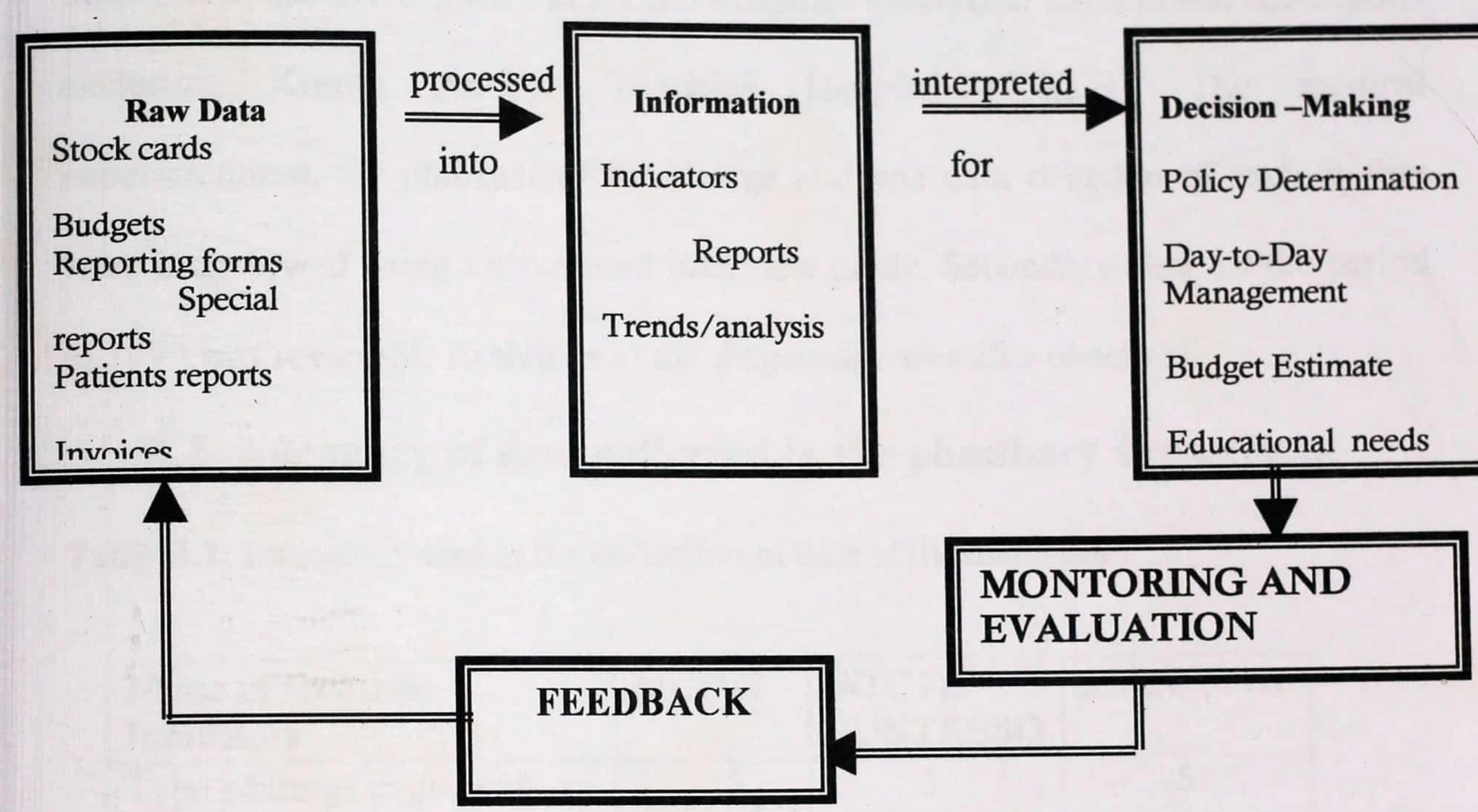
Khokar (1992), reports that the current status of information systems in most countries shows shortcomings and inadequacies at all levels.

He further states that there is either excessive irrelevant collection of data or there is too little information available in time for making rational decisions, this he attributes to the following,

- the ignorance and low educational status of the community health volunteers who are unable to appreciate the real worth of each and every bit of information created at their level,
- appropriate and timely information is not ma de available to different sources,
- in most countries, there is no provision for adequate and timely data processing; this in turn leads to failure in taking timely decisions and absence of feedback;
- lack of training and interest in the development of an effective information system,
- storage devices are inadequate, making the tracing and retrieving of information problematic
- there is lack of supervision and co-ordination at different levels.

heoretical framework

Fig 2.2 : DMIS Information stages



Adapted from Managing Drug Supply (MSH,1997)

The most fundamental element of a successful DMIS is the effective use of the data generated by the system.

Fig 2.2 illustrates the process of transforming raw data into information and interpreting them for use in decision- making. The key steps involves processing data, presenting information, interpreting information sending feedback and taking action.

CHAPTER THREE

RESULTS

3.1 Introduction

This chapter is a summary of findings obtained during a field investigation and a review of secondary data in the Kumasi Metropolis. The survey was conducted in three out of the five Ministry of Health hospitals (MOH) in the Kumasi Metropolis excluding Komfo Anokye Teaching Hospital (KATH). The medical superintendent, the pharmacist- in –charge and one data collector of each facility were interviewed using a structured interview guide. Secondary data for the period of 1999 was reviewed. Activities at the dispensary was also observed.

3.2 Adequacy of data collected in the pharmacy department

Table 3.1: Indicators used in the collection of data at the dispensary

Name of facilities Indicators	**MCHH**	**SOUTH SUNTRESO**	**MANHYIA**
Type of drugs dispensed	5	5	5
Quantity of drugs dispensed	5	5	5
Cost of drugs dispensed	5	5	5
Receipt No. issued	5	5	5
Age if patient is > 70	5	5	5
Expected score	25	25	25
Score obtained	25	25	25
Percentage obtained	**100**	**100**	**100**

Source :compiled by researcher on the field

In the Pharmacy department it was observed that there was no laid down format that facilities in the metro used in the collection of data at the dispensary window. All pharmacist had themselves designed a format that captured the indicators as shown in table 3.1

These indicators were used in filling cash and carry, ASS and AVS returns.

3.3 Type and number of returns submitted

Table 3.2: Type of returns expected to be submitted to the Kumasi Metro Health office.

Name of facilities **Indicators**	**MCHH**	**SOUTH SUNTRESO**	**MANHYIA**
Cash and carry returns	5	5	5
Stock levels	5	5	5
ASS returns	5	5	5
ARV returns	5	5	5
Score expected	20	20	20
Score obtained	20	20	20
Percentage obtained	**100**	**100**	**100**

Source :compiled by researcher on the field

From the table 3.2 above, all three facilities said they submitted the four expected returns to the Metro Health Directorate.

The format for presenting the Cash and carry, ARV, ASS and Stock level returns were the same, these were provided by MOH.

3.4 Storage and retrieval of returns

3.4.1 Storing of data

Table 3.3: Storing of data

Name of facilities	**MCHH**	**SOUTH SUNTRESO**	**MANHYIA**
Obtained Score	2	2	5
Expected score	5	5	5
Percentage obtained	**40**	**40**	**100**

Source :compiled by researcher on the field

In the Kumasi Metro it was observed that all facilities under study did not own computers in 1999, however by August 2000 all facilities had computers but were not being used for storage of data. All facilities stored data(returns) manually.

Manhyia obtained 100% because each type of returns was stored in a separate well labelled file, returns were neatly arranged according to months, and was kept in a drawer, it therefore took about 10 minutes in retrieving returns.

South Suntreso and MCHH both obtained 40% this is because Cash and carry and stock level returns were both jammed in one file labelled as cash and carry returns, returns were not arranged according to months. Because they were all mixed up in the file it took about 1hour retrieving the returns which were not all intact. ASS and ARV were also stored together in one file at MCHH.

3.4.2 Retrieval of data

Table 3.4: Retrieval of Cash and Carry returns

Name of facilities Months	**MCHH**	**SOUTH SUNTRESO**	**MANHYIA**
January	0	0	1
February	0	0	1
March	0	1	1
April	0	1	1
May	0	1	1
June	0	1	1
July	1	1	1
August	1	1	1
September	1	1	1
October	1	1	1
November	1	1	1
December	1	1	1
Expected score	12	12	12
Score obtained	6	10	12
Percentage obtained	**50**	**83**	**100**

Source :compiled by researcher on the field

From table 3.4 above, percentage retrieval of cash and carry returns for Manhyia, South Suntreso and MCHH was 100%, 83% and 50% respectively.

TABLE 3.5 : Retrieval of Stock level returns

Name of facilities Months	**MCHH**	**SOUTH SUNTRESO**	**MANHYIA**
January	0	0	1
February	0	0	1
March	0	1	1
April	0	1	1
May	0	1	1
June	1	1	1
July	1	1	1
August	1	1	1
September	1	1	1
October	1	1	1
November	1	1	1
December	1	1	1
Expected score	12	12	12
Score obtained	7	10	12
% obtained	**58**	**83**	**100**

Source :compiled by researcher on the field

From table 3.5 above, percentage retrieval of stock level returns for Manhyia, South Suntreso and MCHH was 100%, 83% and 58% respectively

TABLE 3.6: Retrieval of ASS

Name of facilities Months	**MCHH**	**SOUTH SUNTRESO**	**MANHYIA**
January	0	0	0
February	1	0	1
March	0	0	1
April	1	0	0
May	0	0	1
June	1	0	1
July	0	0	0
August	0	0	1
September	0	0	0
October	0	0	0
November	0	0	0
December	0	0	0
Expected score	12	12	12
Obtained score	3	0	5
% obtained	**25**	**0**	**41.6**

Source :compiled by researcher on the field

From table 3.6 above, percentage retrieval of ASS returns for Manhyia, South Suntreso and MCHH was 41.6%, 0% and 25% respectively.

Table3.7– Retrieval of ARV returns

Name of facilities Months	MCHH	SOUTH SUNTRESO	MANHYIA
January	0	0	0
February	0	0	1
March	1	0	1
April	1	0	0
May	0	0	0
June	0	0	1
July	2	0	0
August	0	0	1
September	0	0	0
October	0	0	1
November	0	0	0
December	0	0	1
Expected score	12	12	12
Obtained score	4	0	6
% obtained	**33.3**	**0**	**50**

Source :compiled by researcher on the field

From table 3.7 above, percentage retrieval of ARV returns for Manhyia, South Suntreso and MCHH was 41.6%, 0% and 25% respectively.

It was observed during the survey that nil submissions for ASS and ARV were not done. For ARV and ASS returns the number of returns retrieved was very low with nothing at all at South Suntreso. It was observed that after preparation of the returns, copies were given to the Administration, Accountant, Public Health department and to the Metro Health Administration. However in retrieving the returns in South Suntreso and MCHH returns could not be traced in these other departments.

One accountant had this to say '*I remember receiving them sometimes but I don't think I can find them, I don't keep them in a file ,they are all scattered in this office.*'

3.5 Timeliness of submission of returns.

All three[3] facilities submit their returns to the Metro. The date of submission used to be 10th of preceding month in 1999, however in September 2000 it was changed to 5th of preceding month. Pharmacist in all three [3] facilities knew the deadline for the submission of their returns, however they could not give me the exact date of submission, they all said that submission of returns was late, therefore a score of 0%, as shown in table 3.8 below, this they attributed to late arrival of certain information from the accountant.

The Metro Director had this to say in an interview *'returns are usually late and this makes it difficult to collate for onward submission of returns to the Regional Health Administration'.* This confirmed the issue of late submission however the date of submission of returns could also not be obtained at the Metro level.

Table 3.8 Timeliness of submission of returns

Name of facilities	**MCHH**	**SOUTH SUNTRESO**	**MANHYIA**
Score expected	5	5	5
Score obtained	0	0	0
Percentage obtained	**0**	**0**	**0**

Source :compiled by researcher on the field

3.6 Analysis

At the facility level data was analysed by aggregation of data using calculators. (i.e. daily data was added up to obtain monthly figures). This was used in the preparation of returns. Indicators on cash and carry returns forms were however not analysed e.g. an indicator like working capital was not further analysed.

At the metro level no analysis was performed the reason being late submission of returns.

3.7 Feedback

Table 3.9 : Presence of feedback system.

Name of facilities	MCHH	SOUTH SUNTRESO	MANHYIA	METRO
Score expected	5	5	5	5
Score obtained	2.5	2.5	2.5	0
Percentage obtained	**50**	**50**	**50**	**0**

Source :compiled by researcher on the field

At the facility level, it was observed that pharmacist only gave data collectors feedback when they made mistakes, this the pharmacist confirmed. At the Metro level, it was found that no feedback process existed between Metro and the facilities based on pharmacy returns submitted.

3.8 Uses of returns prepared at the facility level

Table 3.10 : Uses of Cash and Carry returns

Name of facilities Indicators	MCHH	SOUTH SUNTRESO	MANHYIA
Performance review [5]	0	0	0
Monitoring [5]	0	0	0
Submission of returns [5]	5	5	5
Decision–making [5]	0	0	0
Score expected	20	20	20
Score obtained	5	5	5
Percentage obtained	**25**	**25**	**25**

Source :compiled by researcher on the field

It was observed that Cash and Carry returns were not being used in monitoring, decision making and in performance review. They were being prepared for submission to metro, hence the score of 25%.

Table 3.11: Uses of stock levels returns

Name of facilities Indicators	**MCHH**	**SOUTH SUNTRESO**	**MANHYIA**
Performance review* [5]	5	5	5
Monitoring [5]	4	4	4
Submission of returns [5]	5	5	5
Decision –making [5]	4	4	4
Score expected	18	18	18
Score obtained	20	20	20
Percentage obtained	**90**	**90**	**90**

Source :compiled by researcher on the field

**based on availability of 50 tracer drugs(list prepared by MOH-appendix 5)*

Stock level returns were however used in performance review, decision- making i.e. used in determining which drugs and quantities of drugs that should be purchased by the procurement committee. However none of the facilities used parameters such as minimum and maximum stock level, the date of expiry was also not indicated. Stock level returns were also used to monitor stock levels, to prevent shortage of essential drugs. Percentage usage of stock level returns was therefore 100%.

Table 3.12 –Uses of ASS returns

Name of facilities Indicators	**MCHH**	**SOUTH SUNTRESO**	**MANHYIA**
Performance review [5]	0	0	0
Monitoring [5]	0	0	0
Submission of returns [5]	5	5	5
Decision –making [5]	0	0	0
Score expected	20	20	20
Score obtained	5	5	5
Percentage obtained	**25**	**25**	**25**

Source :compiled by researcher on the field

Returns were not used for performance review, monitoring and for decision making they were prepared for submission to the MHA, hence a low score of 25% .

Table 3.13: Uses of ARV returns

Name of facilities Indicators	**MCHH**	**SOUTH SUNTRESO**	**MANHYIA**
Performance review 5]	0	0	0
Monitoring [5]	0	0	0
Submission of returns [5]	5	5	5
Decision –making [5]	0	0	0
Score expected	20	20	20
Score obtained	5	5	5
Percentage obtained	**25**	**25**	**25**

Source :compiled by researcher on the field

Returns were not used for performance review, monitoring and for decision making they were prepared for submission to metro, hence a low score of 25% .

Table 3.14: Uses of returns at the Metro level

Name of facilities **Indicators**	Cash & Carry	Stock level	ASS	ARV
Performance review [5]	0	5	0	0
Monitoring [5]	0	0	0	0
Submission of returns [5]	5	5	5	5
Decision –making [5]	0	0	0	0
Score expected	20	20	20	20
Score obtained	5	10	5	5
Percentage obtained	**25**	**50**	**25**	**25**

Source :compiled by researcher on the field

Data (returns) collated at the Metro was for onward transmission to the Regional Health Administration. Only stock returns were used for performance review,(% availability of tracer drugs). Returns were not used for monitoring and for decision- making.

CHAPTER FOUR

DISCUSSIONS

4.1 Adequacy of Data Collection

There was no defined format used for the collection of data, however pharmacists in all facilities had designed their own format to capture indicators used in the study. The absence of a uniform format could lead to the collection of excessive and /or irrelevant data collection Data collectors have had no formal or in–service training/ education on data collection they had however been given on-the-job training on how to fill the books by the pharmacist. The data collectors were not aware of what data was being used for. This is contrary to what Khokar (1992) and de Kadt (1995) suggested that health workers should not only be taught how to fill forms correctly but should also be taught how the information being provided can and does improve work. They further reported that institutions must ensure that field workers have adequate training and ability to collect and transmit appropriate data to relevant levels in order for a HMIS to be effective.

Khokar (1992) again stated that information systems in most countries show shortcomings and inadequacies at all levels, and that there was either excessive irrelevant collection of data. It was however observed in the facilities that data collected in the pharmacy department was relevant and adequate for the preparation of the Cash and carry, stock level , ASS and ARV returns, hence a score of 100% (see Table3.1).

.2 Type and Number of returns submitted.

All pharmacist in the Kumasi Metro knew that all the four expected returns, i.e.

- Cash and Carry returns
- Stock level returns
- ASS returns
- ARV returns

had to be submitted to MHA.

It was observed that in the case of ASS and ARV returns, nil submission was not done when the drug was not dispensed this is because the pharmacist did not know it was significant to submit it. A score of 100% as shown in table 3.2 indicated that facilities had sufficient knowledge on returns to be submitted.

4.3 Storage

Although Manhyia had a good storage system ,generally the study indicates that storage of data was poor. Two out of the three facilities scored 40% which was below average(see table 3.3). Percentage retrieval of cash and carry returns and stock level returns in the facilities ranged from 50% to 100% (table3.4). The process of retrieval of returns was however very difficult and cumbersome. This situation clearly indicates the difficulty of attaining a good HMIS if data is haphazardly stored ,and confirms Khokar (1992) that inadequate storage devices made tracing and retrieval of information problematic as shown in table 3.3 and 3.4 where as MCHH obtained a score of 40% and 50% for storage and retrieval.

The percentage retrieval of ASS and ARV were however relatively low as shown on tables 3.6 and 3.7. Findings from the survey also showed that nil submission were not sent to the Metro hence 0% for South Suntreso.

This low submission of both returns gave the impressions that there were very few cases of snake and dog bites in the Metropolis. Further investigation and discussion with the pharmacist at the Regional Medical Stores (RMS) revealed that, facilities were refusing to stock enough quantities because patients were expected to receive them free form the facility to be reimbursed by the Metro at a later date. This the RMS pharmacist said facilities were not in favour because reimbursement was usually late and usually this affected their working capital.

Very little information could be generated from low retrieval of returns, analysis could not be performed returns e.g. returns from South Suntreso could not be analysed (see appendix 2). One could also not tell if returns were not being prepared at all, or low incidence of both snake and dog bites or it was really a case of not submitting nil returns. Again low retrieval or difficulty in retrieving data/ information could lead to management taking decisions based on intution rather than information as stated by Lucey (1992). This confirms the need for education on the concepts of HMIS in the Metropolis, indicating that health workers in the pharmacy department were not well informed on basic concepts of HMIS.

4.4 Timelines of submission of returns

Lucey (1992)and WHO (1997) were of the view that timeliness of data/ information submitted was very important.

WHO (1997), further states that two bottlenecks that threaten timely receipt of information were :- the speed of aggregation of data, and the speed the report is being submitted to the next level.

Findings from the field work indicated the same problems in submission of returns, as late submission of returns was being practised in the Metropolis. Late submission of returns was blamed on the accountant, which indicated that there was lack of teamwork and poor co-ordination between the pharmacist and the accountant. It was observed that due to late submission to the Metro, returns could not be used for anything apart from submission. This is confirmed by research reports that a major source of dissatisfaction with information systems is the arrival of information too late to be used effectively (Lucey, 1992).

It was also observed that documentation was not being well done as date of submission and date of acceptance could not be obtained at the facility and Metro level respectively. This made it difficult to ascertain by how much the facilities were deviating from the norm. Documentation of the date serves as a form of monitoring index on the submission of returns. The absence of this therefore reflects the indifferent attitudes of personnel in submission of data. There was therefore a need for staff at both metro and facility level to be trained in proper record keeping.

4.5 Analysis

At the facility level data was analysed at the dispensary with the aid of calculators, this was in agreement of MSH (1997), that large amount of data was

reduced to a manageable amount often using summary data and indicators. Thus using indicators in table 3.1 the following parameters were prepared.

1. Monthly drug sales
2. Credit sales to institutions/Exempted Patients
3. Total purchases of drugs for Month
4. Closing stock as at end of Month
5. Cash at hand as at end of Month
6. Total Debtors as at end of last Month
7. Total Creditors to date
8. Working Capital.

However indicators were not being further analysed, this therefore did not conform with Pran and Darko(1993), that data must be summarised and partly analysed at the district and regional levels before reaching the CHS. Further analysis could lead to a more efficient monitoring and evaluation system. As according to WHO (1984), indicators help to measure changes directly or indirectly in measuring program's performance. For example at Manhyia in July 1999 as much as 41.2% of working capital was locked up in exemptions, and at the end of the year as much as 12% had still not been reimbursed (see appendix 4). This therefore caused a reduction of purchasing power and hence could lead to non- availability of essential drugs, thus such analysis could be used in measuring performance of the exemption policy and also as a guide in reviewing the exemption policy. At the facility level because indicators were not being analysed programs could not be well evaluated.

At the Metro level data was not being analysed at all, this was contrary to what MOH - Zambia (1996) reports, that in a decentralised health care system, the

appropriate approach was to collect and send aggregated or analysed data to higher levels because it was expected that DHMT would consolidate hospital plans in one operational plan and oversee implementation and monitoring performance. Analysis of returns by the Metro could have served as a very important tool for monitoring and evaluation of the facilities within the Metro. For example instead of the expected mark up of 10%, South Suntreso and Manhyia used 16.4% and 18.4% respectively (see appendix 1&4). Metro could then investigate why those mark ups' are being used and this could be a basis for a review of the mark-up in the Metro. Data therefore collected at Metro was not used efficiently thus , proving the hypothesis of inadequacy of information in making HMIS operational.

4. 6 Feedback

The feedback system at the facility level was not adequate as they all scored an average of 50%, data collectors were only given a feedback when they made mistakes, they did not actually know that the data was being used in compilation of returns to be submitted to the Metro. They however thought it was only a way to keep track of the drugs that were being dispensed and to know the amount of money that had obtained from selling the drugs.

This is contrary to Schware (1998), that the success of any management system is heavily dependent on a feedback, in relation to the data collected, which ideally provides incentives for providing accurate and up to date data. He further explains that it's extremely important to spend time and energy on the feedback process particularly on data collectors.

At the Metro level however no feedback system was in place between the Metro and the facilities hence a score of 0% obtained by Metro. This is confirmed by WHO (1997), that when health staff collect and send data to a higher level

(authority) they usually do not receive any feedback as to the findings, and the use to which they are put, this made staff pay little attention to the accuracy and completeness of routine data being collected. The absence of a feedback system is stated by Lippeveld (1997), as a constraint of HMIS. It was observed that however at DHMT meetings, facilities were reminded to try and submit returns early and at HMIS meeting it was also observed that presentations were all tilted towards MCH/FP activities, the only indicator in relation to the pharmacy department mentioned was percentage (%) drug availability. This was inadequate as growth of working capital for example could be a good indicator to know the progress of the facility.

From the perspective of those interviewed, receiving feedback was very desirable as they believed that it would enable them know what the data they were collecting are being are used for. This implied that staff were not well informed, and data collected could be manipulated with, to give wrong impressions.

4. 7 Uses of Returns

Information is said to have value only if it is used. For data to be used appropriately there was the need to convert it into readily useable information and to give the potential user the requisite training on better use, and the knowledge and skills acquired (Khokar,1992). However at the facility level it was observed from the interview that cash and carry, ASS and ARV returns were being prepared only for submission to the, MHA and therefore percentage usage was only 25% as shown in tables 3.12. This showed that although raw data was being processed into information they were not being interpreted for decision- making.

The score of 25% also did not conform with what Khokar (1992) stipulates as a MIS that should enable management make strategic plans and informed decisions. The indicators that form the Cash and Carry form were however not used, or even discussed at Management level, expect credit sales to institutions /exempted patients that was discussed when it was realised that funds had been locked up in exemptions claims and had not been reimbursed. The actual burden of exemption was however not known.

Usage of stock levels returns in all facilities was 90%, because it was being used for monitoring of stock levels and also on deciding which drugs should be purchased. This conforms to MSH (1997), that the purpose of inventory control at the facility level is to:-

- maintain sufficient stock to last between deliveries
- maintain stock at the best possible cost, and within budget limits
- provide appropriate, safe and secure storage.

However contrary to the fact that it prevents expiry of drugs because expiry dates were not written on stock level returns forms, this would delay in detecting if drugs have expired or are about to expire. It was also recognised that facilities did not have minimum and maximum stock levels, this could lead to running out of stock or overstocking which could lead to expiry of drugs. The high usage of the stock level returns was probably due to its' direct bearing on activities of the pharmacy department.

WHO (1988), reports that an effective HMIS can aid efficient and effective planning and management of available resources, and hence information is a vital resource, and is the domain of monitoring and evaluation. However at the metro level this can not be said as returns were generally under-utilised with a score of 25% for all returns with the exception of the stock level returns with a score of 50%. Returns were usually collated for submission to the RHA. Returns were not being used for decision-making.

CHAPTER FIVE

CONCLUSION

The study indicates that in the pharmacy department, although data collected was adequate in the preparation of all four monthly returns, there was no uniform format used in the collection of data at the dispensary window of the pharmacies in all three facilities.

The pharmacist, due to late submission of inputs from the accountant, did not submit returns prepared in the pharmacy department on time, indicating lack of teamwork and poor co-ordination between the pharmacist and accountant in all three facilities. The feedback system in the facilities was found to be inadequate. Pharmacists did not give data collectors adequate feedback to serve act as an incentive for improve performance. At the Metro Health Administration, a feedback system did not exist as issues that form HMIS in the pharmacy department were not discussed at Metro Health Management Team meetings. This indicates that the basic concepts of HMIS were not well understood or known or practised in the facilities.

Storage of returns was generally poor in the facilities making retrieval of returns very difficult. In all three facilities, returns were also not being adequately analysed; data was being aggregated into indicators with the aid of a calculator; indicators were not further analysed into trends; e.t.c. At the metro level however returns were just collated, there was no further analysis. In all three facilities and in the MHA cash and carry, ASS and ARV returns were being prepared for submission to a higher level thus under-utilisation

of returns in decision- making. The stock level returns were however being used in the facilities to ensure adequate flow of drugs in the facilities.

Comparing the study results, with the theoretical framework it is observed that raw data is collected and processed into indicators but is not being used for decision – making. Hence there is a break in the management information stages. The hypothesis, 'The HMIS in the pharmacy departments in the Kumasi metropolis is inadequate to make it operational' is therefore confirmed.

To conclude therefore HMIS within the pharmacy departments studied is rudimentary and poor. HMIS will be ensured if staff are adequately trained and attitudes are changed. This would lead to information being used for decision –making within the Kumasi metropolis

CHAPTER SIX

Recommendations

Based on the results and discussions , the following recommendations are being made :

1. The establishment of an effective HMIS to aid in decision –making, this can be achieved by addressing the following,.

- Lack of adequate knowledge on basic concepts of HMIS in both the facilities and the MHA. Here it is being recommended that all staff in the Kumasi metropolis must be trained on the relevance of an effective HMIS, and the basic concepts of HMIS including the following, proper record keeping, storage of data, timeliness of submission of data and presence of feedback system. This would be an incentive as data collectors and users will appreciate the need to collect accurate and up to date data to be used in decision- making.
- Inadequate analysis of data was observed in both the facilities and at the MHA during the study. In solving this problem it is being recommended that staff responsible for analysis must be trained on various methods of analysing data , to enable them provide trends e.t.c. that could form part of the supervision and monitoring protocol.
- Poor storage of data and poor retrieval at the facilities can be improved upon by Computerisation of the pharmacy department.. Computer training should therefore be made mandatory in the facilities to enable staff use computers efficiently.
- The absence of a uniform format for collecting data at the dispensary window was also cited as one of the findings of the study, it is being recommended that the MHA should standardise the format for collecting data in the pharmacy department.

2. The MHA should revise the format for HMIS conferences to include comprehensive presentations from all key departments within the facilities .
3. Supervision and monitoring at MHA should be strengthened to ensure that HMIS is effectively implemented. After monitoring a feedback report should be sent to the facilities involved and interesting findings discussed at DHMT meetings.

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Appendix 1

ANALYSIS OF CASH AND CARRY RETURNS FOR 1999 (% mark up)—SOUTH SUNTRESO HOSPITAL

A	B	C	D	E	F	G	H	I
JAN	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FEB	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MAR	28,259,650.78	6,456,600.00	645,660.00	28,259,650.78	0	100.00	-	10.00
APR	30,001,590.78	5,495,200.00	549,520.00	28,809,170.78	1,192,420.00	104.14	4.14	14.14
MAY	31,286,665.00	9,695,400.00	969,540.00	29,778,710.78	1,507,954.22	105.06	5.06	15.06
JUN	32,953,780.00	11,749,900.00	1,174,990.00	30,953,700.78	2,000,079.22	106.46	6.46	16.46
JUL	33,294,195.78	10,866,000.00	1,086,600.00	32,040,300.78	1,253,895.00	103.91	3.91	13.91
AUG	34,098,790.78	3,205,900.00	320,590.00	32,360,890.78	1,737,900.00	105.37	5.37	15.37
SEPT	34,242,819.78	8,213,800.00	821,380.00	33,182,270.78	1,060,549.00	103.20	3.20	13.20
OCT	36,885,405.78	8,564,000.00	856,400.00	34,038,670.78	2,846,735.00	108.36	8.36	18.36
NOV	39,535,998.78	10,860,500.00	1,086,050.00	35,124,720.78	4,411,278.00	112.56	12.56	22.56
DEC	41,504,878.00	9,484,200.00	948,420.00	36,073,140.78	5,431,737.22	115.06	15.06	25.06
								164.12

AVE 16.4124113 /month

KEY

A--MONTHS	D--10% OF MONTHLY SALES	G—MARK UP USING 10% AS REF. B/E*100
B—WORKING CAPITAL	E—EXPECTED WORKING CAPITAL	H—ADDITIONAL % MARK UP BEING USED, 100-G
C--MONTHLYSALES	F—DIFFERNCE BETWEEN B AND E	I—ACTUAL MARK UP BEING USED

Source :compiled by researcher on the field

Appendix 2

ANAYLSIS OF MONTHLY EXEMPTIONS FOR 1999——SOUTH SUNTRESO HOSPITAL

Indicators Months	Monthly exemptions	Cumulative exemption	Amt. reimbursed	Balance	Working capital
January	N/A	N/A	0	N/A	N/A
February	N/A	N/A	0	N/A	N/A
March	2,465,300	2,465,300	0	*	
April	2,229,500	4,694,800	0		
May	2,754,900	7,449,700	3,075,650		
June	2,992,300	10,442,000	0		
July	2,163,900	12,605,900	0		
August	930,000	13,535,900	16,827,400		
September	3,269,700	16,805,600	0		
October	2,454,400	19,260,000	0		
November	3,035,800	22,295,800	0		
December	2,143,700	24,439,500	0		
Total			**19,902,050**		

Source :compiled by researcher on the field

* Analysis could not be done due to limited data

Appendix 3

ANAYLSIS OF CASH AND CARRY RETURNS FOR 1999 (% mark- up)—MANHYIA HOSPITAL

A	B	C	D	E	F	G	H	I
JAN	61,394,382.00	4,403,350.00	440,335.00	61,394,382.00	-	100.00	-	10.00
FEB	60,095,469.00	8,783,494.00	878,349.40	62,272,731.40	2,177,262.40	96.50	- 3.50	6.50
MAR	58,168,513.00	9,459,363.00	945,936.30	63,218,667.70	- 5,050,154.70	92.01	- 7.99	2.01
APR	69,331,983.00	5,518,539.00	551,853.90	63,770,521.60	5,561,461.40	108.72	8.72	18.72
MAY	70,512,232.00	5,880,550.00	588,055.00	64,358,576.60	6,153,655.40	109.56	9.56	19.56
JUN	71,729,105.00	8,212,980.00	821,298.00	65,179,874.60	6,549,230.40	110.05	10.05	20.05
JUL	71,314,140.00	9,231,800.00	923,180.00	66,103,054.60	5,211,085.40	107.88	7.88	17.88
AUG	87,096,035.00	7,893,409.00	789,340.90	66,892,395.50	20,203,639.50	130.20	30.20	40.20
SEPT	83,002,479.00	11,936,637.00	1,193,663.70	68,086,059.20	14,916,419.80	121.91	21.91	31.91
OCT	74,786,850.00	10,986,660.00	1,098,666.00	69,184,725.20	5,602,124.80	108.10	8.10	18.10
NOV	73,025,829.00	13,408,044.00	1,340,804.40	70,525,529.60	2,500,299.40	103.55	3.55	13.55
DEC	80,678,722.00	6,865,320.00	686,532.00	71,212,061.60	9,466,660.40	113.29	13.29	23.29

Source :compiled by researcher on the field AVE 18.48/month

KEY

A--MONTHS	D--10% OF MONTHLY SALES =10/100*C	G—MARK UP USING 10% AS REF. B/E*100
B—WORKING CAPITAL	E—EXPECTED WORKING CAPITAL	H—ADDITIONAL % MARK UP BEING USED, 100-G
C--MONTHLYSALES	F—DIFFERNCE BETWEEN B AND E	I—ACTUAL MARK UP BEING USED

Source :compiled by researcher on the field

Appendix 4

ANAYLSIS OF MONTHLY EXEMPTIONS FOR 1999—MANHYIA

Indicators Months	Monthly exemptions	Cumulative exemption	Amt . reimbursed	Balance	Working capital	% effect on working capital
January	4,357,897	4,357,897	0	4,357,897	61,394,382	7.0
February	4,191,644	8,549,541	0	8,549,541	60,095,469	14.2
March	5,111,653	13,661,194	0	13,661,194	58,168,513	23.4
April	2,133,789	15,794,983	0	15,794,983	69,331,983	22.7
May	4,787,648	20,582,631	0	20,582,631	70,512,232	29.7
June	4,833,494	25,416,125	0	25,416,125	71,729,105	35.4
July	4,015,065	29,431,190	0	29,431,190	71,314,140	41.2
August	2,896,489	32,327,679	18,700,000	10,450,000	87,096,035	11.9
September	5,444,237	37,771,916	0	15,894,237	83,002,479	19.1
October	3,956,800	41,728,716	0	19,851,037	74,786,850	26.5
November	4,728,840	46,457,556	0	24,579,877	73,025,829	30.4
December	3,432,600	49,890,156	18,500,000	9,793,667	80,678,722	12.1
Total	**49,890,156**		**37,200,000**			

Source :compiled by researcher on the field

Appendix-5

FIFTY (50) TRACER DRUGS FOR DISTRICT &REGIONAL HOSPITALS

1. Tab Acetylsalicylic Acid 300mg
2. Tab Amodiaquine Hydrochloride 200mg
3. Syr. Amoxycillin250mg
4. Vials Benzxal Penicillin (IMU)
5. Susp. Choramphenicol 125mg
6. Vials Choramphenicol inj 1GM
7. Drops Choramphenicol 1% 10ml
8. Caps Choramphenicol 250mg
9. Inj Chloroquine (Base-40mg/ml)
10. Syr. Chloroquine (Base-80mg/5ml)
11. Tabs Chloroquine (Base-150mg)
12. Tabs Chlorampheniramine Maelate 4mg
13. Susp. Co- trimoxazole 200 x40 mg
14. Tabs Co- trimoxazole 400 x80 mg
15. Inf. Dextrose 5%
16. Inf. Dextrose 5% x 0.9% Saline
17. Tabs Diazepam 5mg/10mg
18. Inj Diazepam 5mg/ml
19. Inj Ergometrine 0.5mg/ml
20. Tabs Ferrous Fumarate 100mg
21. Tabs Folic Acid 5mg
22. Tabs Frusemide 40mg
23. Inj. Frusemide 10mg/ml
24. Inf Hartmann's soln. BP500/1000ml
25. Inj. Hydrocortisone 100mg/ml.
26. Tab Aluminium Hydroxide 500mg
27. Caps Amoxycillin 250mg
28. Caps Indomethacin 25mg
29. Tabs Ibuprofen 200mg
30. Tabs Mebendazole 100mg
31. Tabs Methyldopa 250mg
32. Tabs Metronidazole 200mg
33. Vials Metronidazole 500mg
34. Syr. Metronidazole Benzoate 200mg/5ml
35. Tabs Multivite BP
36. Syr. Multivite BP
37. Powd. ORS. BP
38. Tabs Paracetamol 500mg
39. Syr. Paracetamol 120mg
40. Inj. Pethidine 50mg
41. Inj. Procaine Peniciliin 4Mu.
42. Syr. Promethazine 5mg/ml
43. Inj. Promethazine 25mg/5ml
44. Tabs Reserpine 0.25mg
45. Inf.Sodium Chloride 0.9% 500ml
46. Inf. 5.4.1.cholera
47. Anti –Snake bite Serum
48. Anti- Rabies Vaccine
49. Tetanus Antitoxin 1500units
50. Caps Tetracycline 250mg

Appendix- 6

A Review of Health Management Information System in the Kumasi Metropolis with respect to operations in the Pharmacy Department

QUESTIONNAIRE TYPE-A

Data collectors

Id no.-------

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

Time started---------- Time ended----------

Name of interviewee----------

Current position of interviewee ----------

1. Why do you have to do the following entries? because

a) you have been asked to do so by pharmacist

b) to know what drugs have been given out

c) to reconcile with revenue collector

2. Do you know the usefulness of the data you collecting? [Yes] [No]
3. If yes could you give me 3 reasons?----------

---

4. Have you been given any In –service training in data collection / and data reporting? [Yes] [No]
5. If yes how long ago?.----------
6. What type of data do you collect?----------

---

7. How often do you submit data to the pharmacist?

a) Daily

b) Weekly

c) Monthly

8. Do you usually get a feedback on data submitted to the pharmacist? [Yes] [No]
9. If yes give examples----------

---
10. If no how do you feel?----------
---
11. Do you have a computer in the pharmacy dept.? [Yes] [No]
12. Do you know how to use a computer ? [Yes] [No]
13. If yes ,do you use a computer at point of data collection ? [Yes] [No]
14. For what purpose do you use the computer?

a) analysis data
b) storage of data on drug supply management
c) word processing.

15. Can I have a look at the data entry forms / books used for data entry?

THANK YOU VERY MUCH

FOR YOUR

CO –OPERATION

AND

ASSISTANCE

A Review of Health Management Information System in the Kumasi Metropolis with respect to operations in the Pharmacy Department

QUESTIONNAIRE –TYPE B

Pharmacist in –charge of Pharmacy dept

Date of interview---------- Id no.----------

Time started---------- Time ended ----------

Name of interviewee ----------

Currently position of interviewee----------

1. Are you solely in charge of drug supply management in this facility?— [Yes] [No]
2. If no, who are the people in- charge of drug supply management?
3. On what basis are drugs procured?----------

---

4. What are the responsibilities/ roles of the other members?----------

---

---

5. How often do you meet to discuss issues to do with drugs? ----------
6. Who provides data required in relation to drug supply management?

a) Accountant

b) Medical Supt.

c) Matron

d) Dispensary Technician

e) Others specify

7. How do you translate data into information? ----------

---

8. How do you translate the data into information?

a) Computer

b) Manual

c) Experience

9. What measures have you put in place to monitor drug supply system?

---

10. How often do you get the data from your subordinates in relation to your drug supply management?

a) Daily
b) Weekly
c) Monthly

11. Are you satisfied with the data? [Yes] [No]
12. Is there any data you like to receive on a routine basis that you currently do not receive? [Yes] [No]
13. If yes where could you get this information?----------
14. How would it change the way you work?----------

---

15. Do you usually give feedback to the collectors of the data you use? [Yes] [No]
16. If yes please give examples ----------

---

17. After preparing returns ,what do you use it for? ----------

---

---

18. What returns do you usually submit to the MHD? ----------

---

---

19. How do you analyse data at the facility level?----------
20. If analysed who does the analysis ?----------
21. Do you ever compare returns with previous months returns? [Yes] [No]
22. Do you have the authority to make decisions based on information ? [Yes] [No]

23. If no who makes decisions?----------

---

24. How often is this submitted?

a) Daily

b) Weekly

c) Monthly

25. Do you usually get a feedback on the information you have submitted to the next level? [Yes] [No]

26. Do you collect any other information that aids you in decision making, that you don't submit to MHD? [Yes] [No]

27. Can I please have a look at it?----------

---

28. Do you add any percentage mark up to the cost of drugs when selling to the patient? [Yes][No]

29. What is the percentage mark- up supposed to be used on the sale of drugs?----------

30. Has management taken any decision contrary to this? [Yes] [No]

31. Are you aware that your mark up is more/less than you have stated? [Yes] [No]

32. If no then how are you doing your analysis?----------

---

33. If yes do have any special reason for that?----------

34. Are you a member of the hospital management team? [Yes] [No]

35. Does the hospital management team discus returns from the pharmacy dept. sent to MHD at its meetings? [Yes] [No]

36. If yes can I have a look at your minutes.

37. Does the hospital have a monthly drug bulletin? [Yes] [No]

38. If yes can I please have a look at a copy.

39. How do you identify that drugs are about to expire or have expired?

40. Do you have an exemption policy [Yes] [No]

41. If yes who are exempted?----------

42. Describe the procedure used in dispensing drugs to patients who qualify for exemption what data do you collect on exemptions?----------

---

---

43. What information do you get from these data ?

a) Quantity of drugs used

b) Time of issue of drugs

c) Value of drugs dispensed

What do you use this information for?----------

---

44. Do you discus this at facility level? [Yes] [No]

45. what do you think must be done?

46. Do you ever submit returns on ASS and AVS when you have not dispensed any during the month? [Yes] [No]

47. If no, why?----------

48. What role does MHD play in your decisions in relation to drug supply management? ----------

49. What feedback do you receive from MHD?----------

---

50. What role does RMS play in your decisions in relation to drug supply management? ----------

---

51. What support do you receive from RMS?----------

---

52. How do you monitor your performance?----------

---

53. What indicators are used to monitor drug supply performance by the MHD when they come on monitoring?----------

---

---

54. Do you have computers in the facility? [Yes] [No]

55. Do you currently use a computer in collecting data at data generation point?

[Yes] [No]

56. If no ,why?----------

57. Do you know how to use the computer? [Yes] [No]

58. Is there anything in relation to drug supply that we have not touched that you find very important?----------

THANK YOU VERY MUCH

FOR YOUR

CO-OPERATION

AND

ASSISTANCE.

A Review of Health Management Information System in the Kumasi Metropolis with respect to operations in the Pharmacy Department

QUESTIONNAIRE- TPYE C
Head of health facility

Date of interview ------ Id. No.----------

Time started---------- Time ended----------

Name of interviewee----------

Current position of interviewee----------

1. Do you usually have to make decisions in relation to drug supply management?

[Yes] [No]

2.If yes what decisions do you usually make?----------

---

3. Who is /are also responsible for making decisions based on drug supply management?----------

---

---

4. Do you usually base your decisions on information ?- [Yes] [No]

5.If yes, what information do you normally get to make these decisions?-----

---

---

6. Who provides that information ?----------

7. How often do you get this information/ data?

a) Daily
b) Fortnightly
c) Monthly

8. Are you satisfied with the number of times you receive this information? [Yes] [No]
9. In what form do you usually receive this data/ information?

a) Analysed form

b) Raw data form

10. If analysed who does the analysis?----------

11. Is there any data/ information you like to receive on a routine basis that you currently do not receive? [Yes] [No]

12. If yes, what information would you need?----------

---

13. Where could you get this data/ information from?----------

---

14. How would it change the way you work?----------

---

15. Do you usually give feedback to the producers of the data /information use? [Yes] [No]

16. What data /information does your facility usually provide to the MHD? ----------

---

17 .How often is this submitted?

a) Daily

b) Weekly

c) Monthly

18. Do you usually get a feedback on the information you have submitted? that you currently do not receive? [Yes] [No]

19.If Yes ,could you please give examples ----------

20.What role does MHD play in your decisions in relation to drug supply management?----------

---

21.What support do you receive from MHD? _____

_____

_____

_____

22 What is the percentage mark up is to be used on the sale of drugs?_____

23.Has management taken any decision contrary to this? [Yes] [No]

24. Are you aware that your mark up is more/less than you have stated? [Yes] [No]

25. If no then how are you doing your analysis? _____

26.Do you go strictly by this? [Yes] [No]

27. Does the hospital management team discus returns from the pharmacy dept. at its meetings? [Yes] [No]

if yes which of them_____

28. If yes can I have a look at your minutes _____

_____

29. Does the hospital have a monthly drug bulletin? [Yes] [No]

30.If yes can I please have a look at a copy?

31. what effect does the exemption policy have on your operations?

32.Do you discus this at facility level? [Yes] [No]

33. How do you monitor your performance?_____

_____

34.How is the your drug supply performance monitored by the MHD? –

_____

35. Do you think indicators used by MHD are sufficient?[Yes] No]

THANK YOU VERY MUCH

FOR YOUR

CO-OPERATION

AND

ASSISTANCE.

A Review of Health Management Information System in the Kumasi Metropolis with respect to operations in the Pharmacy Department

QUESTIONNAIRE- TPYE D

Metropolitan Health Director

Date Of Interview _____ ID NO._____

Time Started _____Time Ended_____

Name Of interviewee _____

1. Do you usually have to make decisions on drug supply management?
2. [Yes] [No]
3. On what basis do you usually make such decisions?----------

   ---

   ---

4. What returns do expect to receive from the facilities?----------

   ---

   ---

5. Are you satisfied with the returns usually submitted? [Yes] [No]
6. When are facilities suppose to submit returns----------

   ---

7. Are returns submitted on time? [Yes] [No]
8. What do you do with returns submitted by the facilities?----------

   ---

9. Do you usually analysed returns received from the facilities? [Yes] [No]

10. If yes who analysis the returns----------
11. If no why?----------

12. Do you intend give facilities any feedback on returns submitted? [Yes] [No]
13. Do you usually discuss such returns at DHMT meetings? [Yes] [No]
14. If yes ,could you kindly let me have a look at your minutes?
15. What is the expected mark- up on the sale of drugs at the facility level?----------
16. Are you aware that % increase in drug capital is not uniform in the Metro? [Yes] [No]
17. If yes what have you done about it?----------
18. What indicators do you usually use in monitoring the performance of the pharmacy department ----------
---
---
18. Have you realised that prices of drugs at the facility vary ? [Yes] [No]
19. If yes , what have you done about it? ----------

---
20. Are you aware that the exemption policy affects the working capital of the facilities ?[Yes] [No]
21. If yes what are you doing about it?----------
---
22. How often do you reimburse the facilities? ----------
23. How often do you go on monitoring?----------
24. Do you have a pharmacist on the monitoring team? [Yes] [No]
25. Have you realised from the stock returns that some of the drugs stocked are not in the essential drug list? [Yes] [No]
26. If yes what is your reaction?
27. Is there any other information you would like to receive on routine basis. [Yes] [No]

28. If Yes where can you get this information from----------

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29. How would it change the way you work?----------

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30. When do you submit data to the RHD? ----------

31. Do you get any feedback from RHD on drug returns submitted? [Yes] [No]

32. If yes in what form?

a) Oral

b) Written

33. Do you currently use a computer ? [Yes] [No]

34. If yes for what purpose do you use the computer?

35. collection of data generated

36. analysis of data,

37. word processing.

38. Is there anything in relation to drug supply that we have not touched that you find very important?----------

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THANK YOU VERY MUCH

FOR YOUR

CO –OPERATION

AND

ASSISTANCE