

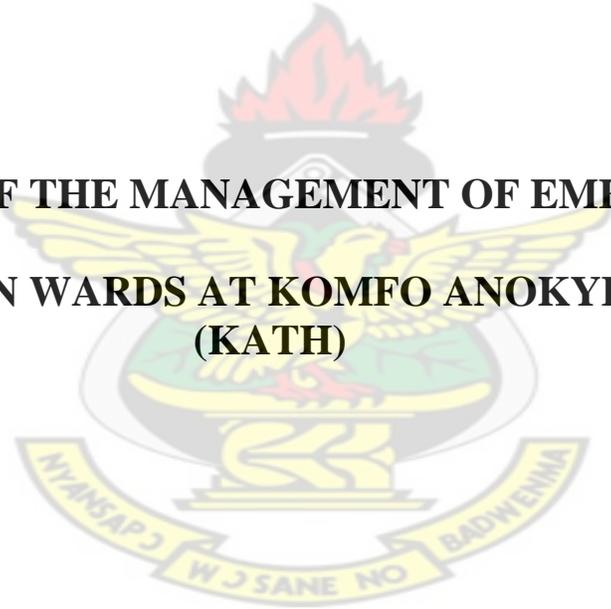
**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND
TECHNOLOGY, KUMASI**

COLLEGE OF HEALTH SCIENCES

FACULTY OF PHARMACY AND PHARMACEUTICAL SCIENCES

DEPARTMENT OF SOCIAL AND CLINICAL PHARMACY

**EVALUATION OF THE MANAGEMENT OF EMERGENCY
DRUG BOXES IN WARDS AT KOMFO ANOKYE HOSPITAL
(KATH)**



By

OLIVIA AGYEKUMWAA BOATENG

JUNE, 2009

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By

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**A THESIS SUBMITTED TO THE DEPARTMENT OF SOCIAL AND
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KUMASI

In partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

FACULTY OF PHARMACY AND PHARMACEUTICAL SCIENCES

COLLEGE OF HEALTH SCIENCES

JUNE, 2009

DECLARATION

I, Olivia Agyekumwaa Boateng, hereby declare that this submission is my own work towards Master of Science degree and that to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, or any other University, except where due acknowledgement has been made in the text.

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Signature

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Date

DEDICATION

This work is dedicated to Kwame my husband, the love of my life and my wonderful son, Jeffery whose support will forever be cherished.

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ACKNOWLEDGEMENTS

I express my sincere gratitude to Dr. (Mrs.) Frances Owusu Daaku, and Mrs. Afia Marfo, my supervisors, for their devotion and guidance towards the completion of my work.

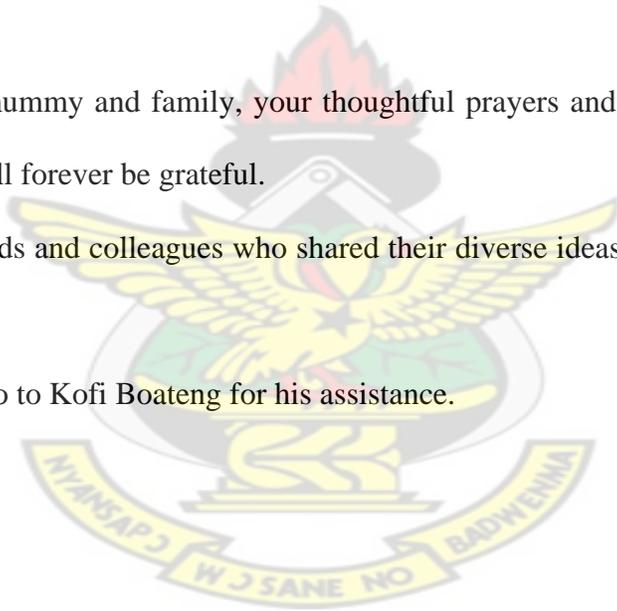
I say thank you to Dr. Anto Berko and Dr. Buabeng who also took me through the initial stages of the Clinical Pharmacy Programme.

I also appreciated the encouragement and support from Dr. and Dr. (Mrs.) Shirley Owusu -Ofori.

To my wonderful mummy and family, your thoughtful prayers and support has brought me this far, and I will forever be grateful.

To all my dear friends and colleagues who shared their diverse ideas with me I say thank you.

Finally my thanks go to Kofi Boateng for his assistance.



DEFINITION OF TERMS

- Anaphylaxis - An acute systemic and severe type I Hypersensitivity allergic reaction in humans
- Arrhythmias - A disorder of the heart rate (pulse) or heart rhythm, Such as beating too fast, too slow or irregular.
- Bronchospasms - A sudden constriction of the muscles in the wall of the bronchioles.
- Hypovolaemia - A state of decreased blood volume, more specifically decrease in blood plasma
- Meningococcaemia - An acute and potentially life-threatening infection of the bloodstream that commonly leads to inflammation of the blood vessels.
- Septicaemia - It is the presence of bacteria in the blood and is often associated with severe disease
- Emergency drug box - a pre-determined box containing prescribed emergency items used to attend to emergency cases
- Drug - Any substance that when absorbed into the body of a living organism, alters normal bodily function
- Management - Getting people to use the required resources effectively to achieve a desired goal
- Ward In-charge - A senior nurse responsible for the management of a hospital ward.

ABBREVIATIONS/ ACRONYMS

DRABC	-	Danger, Response, Airway, Breathing and Circulation
EMS	-	Emergency Medical Services
KATH	-	Komfo Anokye Teaching Hospital
IMPAC	-	An Elekta Group providing information technology Solutions of emergency drug systems
PLHB	-	Powys Local Health Board
WHO	-	World Health Organization

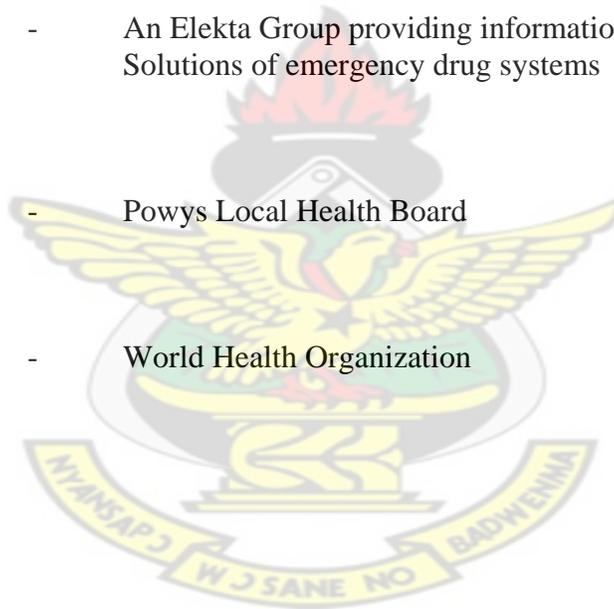
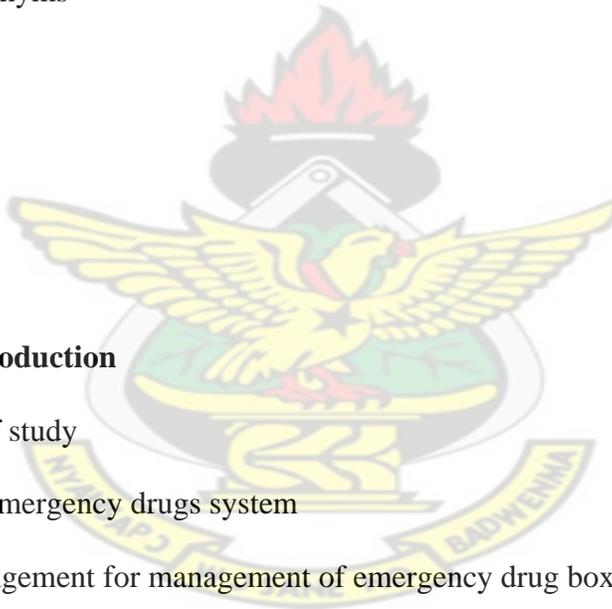


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ABSTRACT

This is an evaluative study into the management of the emergency drug boxes at Komfo Anokye Teaching Hospital (KATH), Ghana. It was aimed at assessing the extent of adherence to the emergency drug management policy of the hospital. By simple random sampling, 29 wards were selected for the study in addition to the interview of 60 staff conveniently selected. An observation checklist, an interview guide and a questionnaire were used to assess the emergency drug boxes, ward in-charges and pharmacist, and other health professionals respectively.

The results showed that 34% of the wards did not have emergency drug boxes because it had not been requested for (40%), or it had not been given to the ward (40%). Eighty four percent (84.2%) of the emergency drug boxes available were found in the wards, 68% of the boxes were not labelled and, 37% of the boxes did not have drug list available. Access to the content of the boxes were difficult because 68% did not have keys readily available for use. Of those that had keys available, 68% contained expired drugs. Ninety percent of staff interviewed was dissatisfied with the management of the emergency drug boxes because; drugs were not replaced (79.6%). The reason for non-replacement of the content of the emergency drug boxes included workload (46.2%) and forgetfulness (30.8%). The emergency drug boxes were not regularly monitored (32%). Out of the boxes regularly inspected, there was no documentation (50%) for that activity.

It was concluded that the management of the emergency drug boxes at the wards of KATH from June 2008-August 2008 did not meet the prescription for the emergency drug boxes guidelines of the hospital. It was therefore recommended that the hospital

management revive the essence of the use of emergency drug boxes and ensure strict supervision on its effective management by the directorates.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Emergency situations are known to be sudden within human capacities. The world over, several emergencies have arisen causing a high number of deaths. Such emergencies, whether natural or human initiated, require responses that are based on more planned and comprehensive actions (WHO, 1992). These actions including prevention, mitigation, response and recovery efforts must be systematic and focused yet prompt in saving lives. Such emergencies occur in all sectors but most critical is that which occur in the health sector. Medical emergencies occur rampantly and unannounced in the management of patients in out patient and in-patient departments. In-patient management of medical emergencies proves to be a greater challenge considering the close monitoring required for managing such patients coupled with unpredictable and sometimes unanticipated incidence of development of complications. The response in medical emergencies in the health sector informs the level of quality of services in the sector and more importantly, ability to save lives (IMPAC, 2000).

The quality of clinical health services provided to clients continues to be a challenge for many health managers and health professionals especially in developing nations. This challenge is grounded in a complex imbalance of health resources including structural, logistics, human and system inadequacies (Ahmed and Majeed, 2008). Despite this difficult environment, health professionals endeavour to design and institutionalise systems and protocols to contain cases encountered. Their bedevilment however, has to

do with, not only the provisions of appropriate means of improving care, but more importantly, maintaining set standards (Jowett, 2003) however local they may be. Maintaining such systems prove difficult especially during the management of emergency cases.

Emergency management systems are well developed in advanced countries but ill-managed or sustained in developing nations. The essence of these systems is to ensure that lives can be saved through prompt responses, and in relation to emergency drugs boxes management, to facilitate and ensure easy access to drugs that could otherwise take a long bureaucracy to obtain. Emergency responses in hospitals in developing nations account for a considerable number of deaths that could have been prevented (PLHB, 2004).

Drugs are essential components required in rendering quality care to patients. In fact, without drugs many more people would have died of preventable clinical conditions including emergency conditions such as cardiac arrest and severe acute pain among others. It is therefore imperative that such vital tools are always available in the provision of total and quality health care for people. The dynamics of drug management as related to its procurement, distribution, storage, availability, use and control are of immense importance in ensuring that its purpose is served (Costa, *et. al.*, 2008). In the case of emergency drugs box management, the complexity related to monitoring and ensuring appropriate use of its contents are of great concern.

Total quality improvement of health care, especially in relation to the management of emergencies, is desirable, but requires regular evaluation in the form of audits. Auditing of emergency protocols is *sine qua non* to achieving reduced mortality rates especially in tertiary health facilities. The examination of due processes in the management and handling of emergency drugs at wards of hospitals is therefore important in ensuring the maximization of its use. The evaluation process usually aims at examining the gaps in adhering to the protocols related to its use so that efforts could be made in improving service response time to emergency cases. This requires a well managed emergency care system that is founded in proper logistics provision in the form of emergency drugs boxes availability and access.

The unpredictable nature of incidence of emergency situations such as haemorrhagic disorders, asthmatic attack, cardiovascular conditions among others, makes the institutions of emergency drugs boxes essential. Many unexpected deaths have been prevented due to the usefulness of emergency drugs boxes. Its presence facilitates easy access and use of drugs required for emergency cases in hospitals (Baird, A.2008).

Tertiary hospitals in Ghana, including Komfo Anokye Teaching Hospital (KATH), manage many cases of emergencies. Wards of tertiary hospitals have emergency boxes as a pro-active measure to curtail mortalities due to emergencies. Komfo Anokye Teaching Hospital, a thousand bed tertiary hospital, with over 600,000 attendances per year has over 70 specialised and general wards where emergencies are managed. Due to the hospital's role in the provision of tertiary health care, especially in

response to emergency cases, its wards, by policy, are supposed to have emergency drug boxes that could meet the demands resulting from emergency cases referred. Most of such emergencies are referred from hundreds of hospitals, clinics and health centres both private and public from both within and outside the borders of the country.

1.2 Evaluation of emergency drugs system

Evaluation is pivotal in ensuring total quality improvement of health care systems including emergencies. Operationally, clinical evaluation is therefore necessary in ensuring that the right procedures are used for the maximisation of resources. According to Crombie et. al., 1997, the systematic and critical analysis of quality medical care is essential in improving medical services delivery to the client. These include assessments of the procedures used for diagnosis and treatment of patients, the use of medical resources and also outcome of the services. These are pivotal as it justifies the essence of instituting health facilities to the benefit of society. Thus, even though health facilities serve a social purpose of maintaining health and restoring health to the sick, the sustenance of that role requires regular reviews in order to maintain standards and ensure quality in the health delivery system. It is therefore imperative that the nature of quality of care to patients, the organization of the health facility - in this case emergency drug boxes – are well examined. The challenges posed by these dimensions of health care in recent times need attention and continuous examination for the total improvement of quality of life.

Achieving the above requires that National Health Management Systems provide a broader framework for effective institutionalization of emergency drugs system.

1.3 Structural arrangement for management of emergency drug boxes

- **The Emergency Drugs Box Management Guidelines at KATH**

KATH has a working document that set outs the framework for the management of emergency drug boxes. The rationale, as can be deduced from the guidelines, is in line with ensuring access to emergency drugs in all the wards. The outline of the guidelines stipulates that:

1. All emergency drug boxes shall be provided by a pharmacist and documented with the list of drugs kept at the pharmacy outlet.
2. emergency boxes shall be stored in a medication room or other secured areas on the ward
3. only the supplying pharmacist or authorized health personnel on the ward (i.e. doctor/nurse) shall obtain access to such room or area, by key or combination in order to prevent unauthorized access and to ensure proper environment for the preservation of the emergency drug boxes and to also prevent losses
4. the exterior of the boxes shall be labelled so as to clearly indicate that it is an emergency box for use in emergencies only. The label shall contain a listing of the drugs including name, strength, route of administration and expiry date
5. all boxes shall be inspected regularly by supplying pharmacist to determine date and quantity of drugs and every inspection documented

- **Other frameworks in other settings**

In Wales, there is a national framework for emergency drug box management that is locally adopted by various hospitals. The Powys Local Health Board (PLHB) of the Bronllys Hospital has a detailed outline of forms and procedure required for the management of emergency box drugs. This includes responsibilities of the supplying pharmacist in ensuring adequate and appropriate supply; the content of the boxes, their locations and access by all staff. The hospital has a three tier emergency box system – a black box for general wards; a blue box referred to as cardiac arrest box and another referred to as dental clinical emergency box. The first two boxes have the first line emergency drugs (PLHB, 2004). What is essentially different from that of KATH is that, all staff in the hospital must be aware and that the boxes are all contained in what is called a resuscitation trolley that contains among others the map of the hospital site and the list of drugs required at every ward. In addition, the hospital manager, in the case of KATH, the nurse manager should be responsible for monitoring the trail and ensure that its contents are intact. The fact that time allowed for reporting of lapses is enshrined in this framework makes another difference. For instance the nurse manager should receive a report within three hours of the lack of laminated maps and list of drugs on the trolleys for action.

In University of Illinois, Chicago, the Centre for Magnetic Resonance Research, an Emergency Crash Cart – a monitoring tool - is attached to the Emergency Drug Box. The responsibility to monitor the usefulness of the crash cart lies with the pharmacist. The pharmacist is responsible for the maintenance and upkeep of these emergency crash

carts. Expiration dates on the emergency drug box is reviewed every month and documented on a check form by a coordinator. In addition to all the above information on the crash cart and emergency box, the patient's name and account number is indicated so as to ensure effective recovery of used content and its replacement (Centre for MR, Research, 2006).

1.4 Emergency drugs in general practice

It is a requisite that in general emergency practice, practitioners need to have adequate knowledge, skill, drugs and emergency boxes or bags to be effective. The practice of managing emergencies in hospitals is a multidisciplinary one requiring the hands of all professionals including orderlies. The general principles for taking emergency action in a hospital setting include: DRABC model (Danger, response, airway, breathing, circulation); activating a crisis resource management plan e.g. get help (ambulance), taking of history of the client which should capture drugs given, allergies and oxygen given when required. The other guidelines include administration of intravenous drugs when required; continuous assessment and management of patient is done until stable; (especially if sedative drugs were given); consult a specialist or emergency department if available or transfer to a referral site; follow infection prevention techniques in all procedures; take detailed notes into patients records; and arrange for debriefing as appropriate (Baird, A, 2008).

The emergency drug boxes should contain drugs meant to be used for three categories of cases: life threatening medical emergencies, potentially life threatening

emergencies and those for non-life threatening medical emergencies. The life threatening conditions include cardiac arrest and anaphylaxis. The potentially life threatening emergencies comprise asthma and bronchospasm which could be critical or mild, acute coronary syndrome, acute pulmonary oedema, arrhythmias and hypovolaemia. The rest are postpartum haemorrhage and incomplete abortion, hypoglycemia, convulsive status longer than 10 minutes, opioid induced respiratory depression and meningitis and or meningococcaemia and suspected septicaemia. The non-threatening emergencies include nausea and vomiting, severe acute pain, migraines and painful wounds (Baird, A.2008).

The box should contain among other things, normal saline, adrenaline, atropine, diazepam, hydrocortisone, morphine sulphate, glucagons and glucose. The following should also be available: nebulizers, oxygen, syntometrine, prednisolone, aspirin, morphine, benzyl penicillin, rocephin, diclofenac and pethidine. There should also be enough bandage, scissors, plaster and vital statistics equipment to monitor the clients. Equipments including an automated external defibrillator with monitor and manual override, pulse oximeter, and portable pacts that could be taken for use offsite are requisites for providing emergency services. Ideally ambulance service systems should be in place for fast transfer of clients to a relevant department or referral sites when needed. It is noteworthy that depending on the hospital and the specific department within a hospital there may be varied contents in the emergency drugs box (Hiramnek N et. al, 2004).

There should be clear and detailed guidelines for the use of all emergency items and all staff should be trained accordingly. List of drugs, dosage, contraindications and adverse reactions should be easily accessed to facilitate effective use during emergency cases.

1.5 Access to Emergency Drug Boxes

Physical access to emergency drug boxes is key to ensuring its effective use. However, uncontrolled access leads to misuse or abuse of the drugs in some hospital settings. According to PLHB, (2004), it is not enough to have adequately furnished emergency boxes but also a well known procedure for health professionals to access the boxes. In a study of dental emergency cases, McCullough, (2007) observed that ensuring that the box is accessible is important but also relevant is access to its content. Access therefore includes not only the fact that all health professionals can see and have a key to the box when necessary, but more importantly the boxes should be equipped appropriately all the time.

In a national audit of emergency drugs in Wales UK, it was observed that varied teams who are specialized in the same field used different drugs for the management of the same emergency cases. Implicitly, access in relation to standardized drugs for the management of the same cases could also influence outcomes of emergency cases. The lack of standardization of drugs could also affect the speed with which emergency delivery services are rendered (Jowett, 2007), in that, professionals would have to adapt to new administration protocols of the different drugs.

Automated drug management system improves drug monitoring and facilitates access to drugs. In his study, the addition of poorly requested drugs into the database increased the drugs access and use over three folds (Connors, 2006). The study also highlighted that in a large, urban, academic teaching hospital, the separation of emergency drugs from the central pool of drugs, beefed up with an automated system could facilitate access to emergency drugs. The addition of moxifloxacin injection, moxifloxacin tablets, azithromycin injection, and pantoprazole injection to the database increased its order by 4.0-, 7.2-, 6.5-, and 25.0-fold, respectively. This suggests that there should be a conscious effort of managers of emergency drug boxes to continuously update their information systems to inform users of available drugs for use. In addition, manual systems may hinder easy recall of drugs list, and therefore an automated drug information system could be preferred.

In Central Africa, a cross-sectional survey of nurses in emergency departments revealed that the lack of training of professionals could also influence access. Not knowing the type of drugs to use in an emergency condition could delay the provision of appropriate pharmaceutical care. This knowledge-related access was observed to have been a major error detected as a cause of death for most emergency cases (Rampnjato, *et.al.* 2007).

1.6 Monitoring of emergency drugs

For effective management of drugs in general, it is imperative that processes are well defined so as to ensure that the required drugs are accessed, appropriately used and

accounted for. Monitoring of emergency drugs is important as among others it ensures that drugs are well accounted for, storage systems are appropriate, quantity of drugs to be kept are adequate, data on drugs inventory are maintained and expiry dates of drugs checked. (Wagner, 2006). In most hospitals (PLHB, 2004, Jowett, 2007), the use of log books serve this purpose in addition to requisition forms used to ensure effective stocking of emergency items. In recent times the application of computerized network systems with customized software is widely used in both developed and developing nations (Conners, 2006).

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Monitoring of emergency drugs could also curtail errors relating to dispensing and use of drugs by professionals and patients alike. In a study in a paediatric hospital, in Espírito Santo, Brazil, about dispensing errors, it was observed that several errors can occur even in normal out-patient dispensaries where there is less need for emergency response (Costa, *et. al.*, 2008). In the study, it was estimated that the main error affecting dispensing was content error and this error could be rampant in emergency situations.

1.7 Problem Statement

Management of the KATH hospital in their cause to achieve the vision of a centre of excellence, have made efforts in ensuring that emergency boxes are provided, maintained and well managed at all the wards to guarantee quality clinical care services. Their singular aim was to promote access to essential drugs required at critical times of emergencies to manage such cases. For this reason, a decentralized system of management has been instituted with Nurse Managers and Pharmacy Managers at the

directorates levels who oversee the management and administration of emergency drug boxes under the close supervision of Ward In-charges.

Despite these efforts, concerns have been raised on drug use in emergency boxes in the hospital. The concerns have arisen due to reports on drug loss and misuse coupled with avoidable deaths resulting from emergency cases. The ineffective management of emergency boxes could result not only in deaths of clients but also great loss of revenue and credibility to the hospital.

This study therefore intended to evaluate the protocol under which the emergency drug boxes were accessed and utilized. It also investigated the perspective of staff in relation to its efficient use and or abuse.

1.8 Research question

How is the emergency drug boxes at Komfo Anokye Teaching Hospital managed?

1.9 Research objectives

1.9.1 Main objectives

The main objectives of this study were to evaluate the level of adherence to the emergency drug boxes management guidelines of the Komfo Anokye Teaching Hospital and to further assess the extent to which management practices on emergency drug boxes could be improved to facilitate the provision of quality care especially for emergency cases.

1.9.2 Specific objectives

1. to determine the local structural arrangement at the wards that had been made for the management of emergency drug box
2. to estimate the extent of access to the emergency drug boxes by the health care team (doctors, clinical pharmacists, nurses)
3. to establish the level of monitoring of emergency drug boxes at the wards by pharmacy and nurse managers.
4. to measure the percentage of drugs in the emergency drug boxes which were unexpired.
5. to make recommendations for the improvement of the management of emergency drug boxes in the hospital wards.

1.10 Rationale of the study

Management of drugs has a lot of intricacies especially in emergency cases. The problems related to patient management in relation to ensuring that drugs are used rationally continue to be a great burden in most hospitals. During emergencies the lack of access to logistics including drugs could contribute to the occurrence of avoidable deaths.

Systems put in place to manage emergency cases need constant review to ensure that the targets are met. In this regard the abuse of due process and lack of strict adherence to monitoring procedures makes the institution of emergency drugs boxes systems ineffective and costly (Jacob and Hunt, 2005).

1.11 Significance of the study

The significance of the study is to gather scientific evidence that would improve the practice of emergency drug management and also enhance rational use of resources in the hospital wards. In addition, the evidence so gathered would also improve utilization of emergency drugs services and contribute to the reduction of high case fatalities due to emergency cases. The study would also provide a platform for further assessment of general emergency preparedness of the hospital. Thus, management of KATH, and other health facilities could be influenced to make policy and administrative directives that could serve as a guide in effective management of emergency drugs for purpose of ensuring quality pharmaceutical care.

1.12 Conceptual Framework

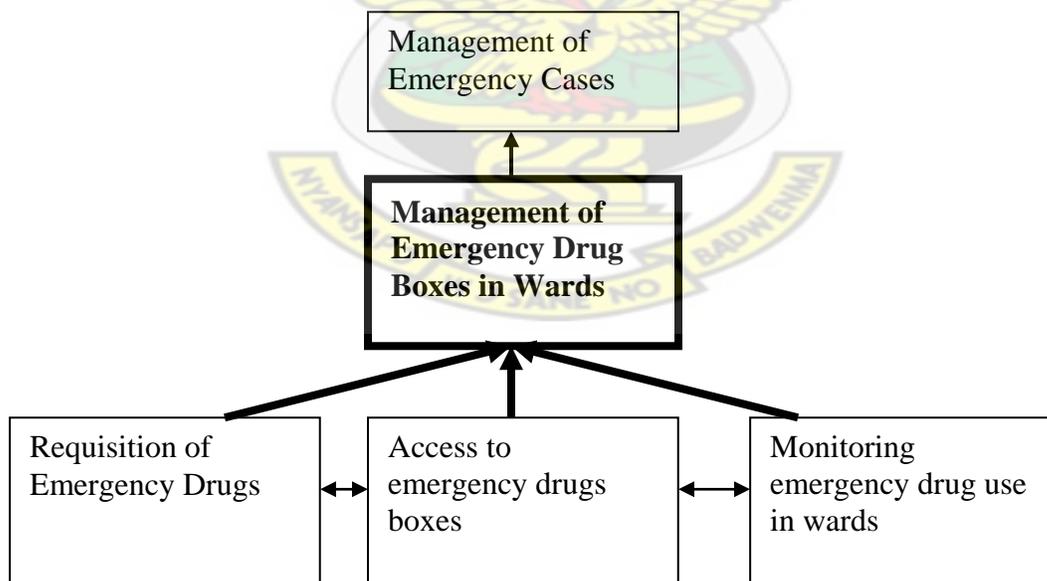
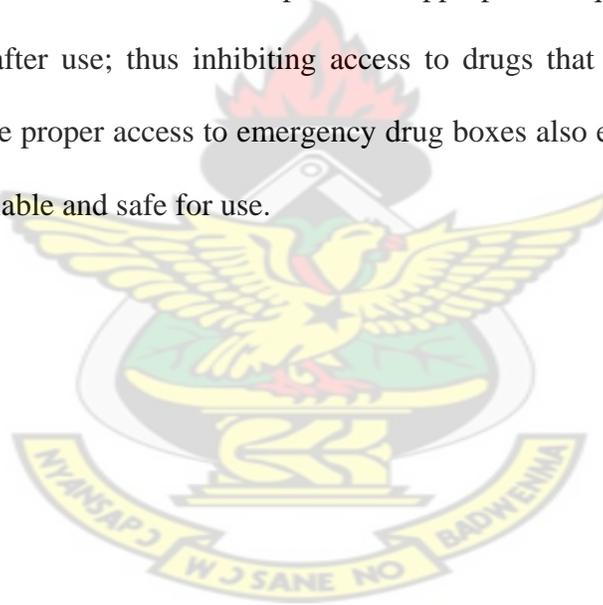


Figure 1.1: The process that underpin the management of emergency drug boxes

Source: Author's construct, 2009

The effectiveness of the management of emergency cases in the hospital is directly related to the efficient and effective management of emergency drugs boxes in the wards. The process of requisition of emergency drugs, promoting access and monitoring are important fundamental procedural factors that affect the extent of effectiveness of the management of emergency drug boxes.

When emergency drug boxes are properly monitored, the requisition for the appropriate drugs could be done on time and thereby promote accessibility. The lack of monitoring on the other hand could lead to poor or inappropriate requisition and failure to replace medication after use; thus inhibiting access to drugs that may be required for emergency cases. The proper access to emergency drug boxes also ensures that drugs are secured, readily available and safe for use.



CHAPTER TWO

2.0 METHODOLOGY

2.1 Study Design

This is a descriptive study with an evaluation design conducted at the Komfo Anokye Teaching Hospital from June 2008 – August 2008. It employed both qualitative and quantitative research methods in assessing the extent of adherence to the emergency drug boxes guidelines at Komfo Anokye Teaching Hospital.



2.2 Study Variables

Both qualitative and quantitative variables were measured in relation to the management of emergency boxes.

Table 2.1 Variables, Operational definition, Means of measurement and Measurement Outcomes

Variables	Operational definition	Means of measurement	Measurement outcomes
Structured arrangement for the management of emergency drug box	Responses to itemized questions including presence of emergency drug box; presence of emergency drug list; monitoring of the box	Observation Interview	% of wards with emergency drug boxes present % of ward with emergency drug list % of wards with adequate emergency drug box management structures
Extent of access to emergency drug box	Responses to specific questions including: availability of key to the box; place of keeping the key; directions to the location of the box; persons responsible for using the box	Observation Interview	% of boxes with available key % of boxes with a known location of key % availability of maps to the location of the key % of persons who know how to access the box
Level of monitoring	Responses to specific questions including: frequency of inspection of the box, who conducts the inspection; documentation of inspection; availability of record of inspection	Observation Interview	% of regular monitoring of inspection % of pharmacist who inspect the box Availability of documentation on access to the box
Proportion of expired drugs in the box	The number of expired items in the emergency drug box divided by the total number of items	Observation	% of items that have expired in the emergency drug box

NB: % = percentage

2.3 Study Area

Komfo Anokye is an autonomous teaching hospital as backed by Act 525, 1996 of the GHS and the Teaching Hospital Act. It has a hospital board with a management team made up of the Chief Executive and five other directors in Administration, Nursing, Pharmacy, Finance and Medicine. For effective management the top management has been decentralized into nine clinical directorates and three non-clinical directorates. The clinical directorates' management manages clinical cases and related administrative issues including emergency drug box management.

The clinical directorates consist of a head, lead clinician, nurse manager, a clinical pharmacist and a business manager (administrator). The nurse manager and the clinical pharmacist have the core responsibility of ensuring the effective use of the emergency drugs box. The nurse manager as a front-liner in this sense also has ward in-charges at the various wards that provide her with day-to-day ward accounts including that relating to the emergency drug boxes utilization.

The hospital has a centralized procurement unit that works in collaboration with the main pharmacy unit in the procurement and supply of medical and non-medical supplies. Medicines required for hospital use including those in the emergency boxes are procured and supplied to the wards by requisition from Pharmacy Stores. Such supplies when out of stock at the wards could be replenished through the requisition process.

Each clinical directorate has a pharmacy outlet that renders pharmaceutical care to the patients. Each directorate pharmacy gets its constant supply of medication specific to the directorate's need e.g. Child-Health Directorate is supplied with drugs for Paediatric Care on requisition from the Pharmacy Stores. These pharmacies operate 24 hourly and are manned by the clinical pharmacist. Patient folders with doctors note and prescriptions are sent to the pharmacies. The clinical pharmacist in collaboration with the nurse manager ensures that patient's drug therapy in particular is met. These requests include that in the emergency drug box. The clinical pharmacist has the responsibility to ensure that the initial stocking of the emergency drug boxes are done and supplied to the wards. However, the nurses have the sole responsibility for replenishing drugs used from the box. This is done by taking the patients prescription to the pharmacy for replacement after the patient has been stabilized.

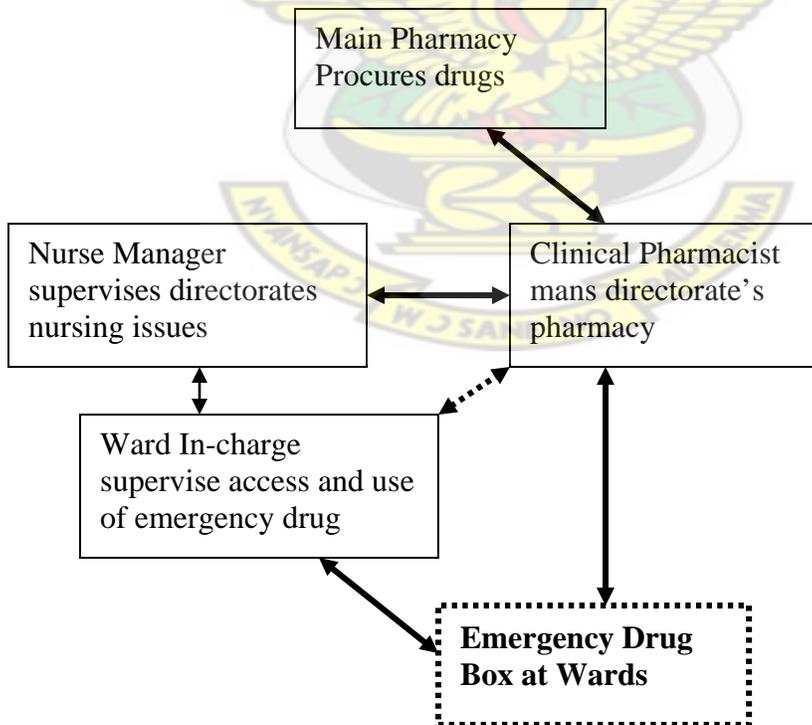


Figure 2.1: A practical framework of the roles in the management of emergency drug box at wards

2.4 Sampling and Sampling procedure

The simple random sampling method of the wards in the hospital was done. A list of all the wards in the hospital was compiled and by the lottery method the sample of 29 was selected. The selected ward of the various specialties were Obstetrics and Gynaecology wards A1 main ward, A1 theatre recovery ward, A1 labour ward, A2, A3, A4 and A5; Paediatrics: wards B3, B4, Paediatric Emergency Unit(PEU), and Mother. Baby Unit (MBU); and Surgery: wards B1, B2, C1, C2, C3, and C4. The wards in the Medicine directorate were C5, C6, D1, D2, D3, D4, D4 Intensive Care Unit, D5 , Medical Emergency Unit(MEU)and Medical Recovery Ward. In DEENT Directorate (Dental Eye Ear Nose and Throat) ward D2A was chosen. One ward in the Oncology Directorate was also selected. The purposive and conveniences sampling methods were employed for the selection of managers of the emergency drugs box and its users. The eligibility criteria used for the selection of the respondent was a worker who had worked in the ward for not less than one year. All 29 ward in-charges and pharmacists for the selected wards were interviewed. A purposive sampling was used to select the ward in-charges and directorate pharmacist because they are principally responsible for the day-to-day management of the emergency drug boxes. Due to the loaded duty roaster of the respondents, a convenient sampling of 60 other staff comprising 40 nurses and 20 doctors from the selected wards was made.

2.5 Data Collection Methods and Tools

The data collection techniques used were interviewing and observation. The interview method was used to assess the perspective of the nurse managers, ward in-charges, nurses, pharmacists and doctors who manage and access the emergency drug boxes at the wards. In addition, a systematic observation was conducted to ascertain whether the pre-determined features required of the emergency drug boxes, in relation to its management and access existed.

The tools used were: a questionnaire, an interview guide and an observation checklist. The questionnaire was self-administered by the nurse managers and the ward in-charges. It contained open and closed ended questions. The interview guide was employed in assessing the perspective of the users (doctors and other nurses). An observation checklist was also used in assessing the important features of the boxes that should be present for effective management and use.

2.6 Data Collection and Analysis

The instruments were pre-tested in Maternal and Child Hospital in the Kumasi Metropolis after which they were standardized. The data collected were coded and labeled with the inscriptions of the respondent's directorate or the ward name as appropriate. The completed tools were packed in a closed file and kept with the researcher. Corrections where necessary, were done or cross-checked with the respondents within 24 hours.

Data analysis was done using the Statistical Package for Social Sciences (SPSS) version 15.0 software. Descriptive analysis was done and for the qualitative data, a thematic matrix was developed for the responses and captured in findings as prose.

2.7 Ethical Issues

Ethical clearance was sought from the Research and Ethics Board of the KNUST-SMS and KATH. In addition, a consent form was designed for the selected clients to sign. The clients willingly participated in the study. They were assured of the confidentiality and privacy of the information disclosed for the study. In addition, they were informed to quit the study and or refuse to answer a question without any penalty. Finally, further assurance was provided to the effect that the participation or provision of information would not affect their association with the hospital now or in the future.

2.8 Assumptions

1. The responses provided by the respondents were accurate and authentic
2. Observation made is the true state of emergency drug boxes management at the selected wards

CHAPTER THREE

3.0 RESULTS

3.1 Structured arrangement for the management of emergency drug box

3.1.1 Availability of Emergency Drug box in Wards

A total of 29 wards in the hospital were selected. Out of the 29 wards, 66% percent had emergency drug box (figure 3.1.a). The reasons for not having emergency drugs box are shown in Table 3.1.

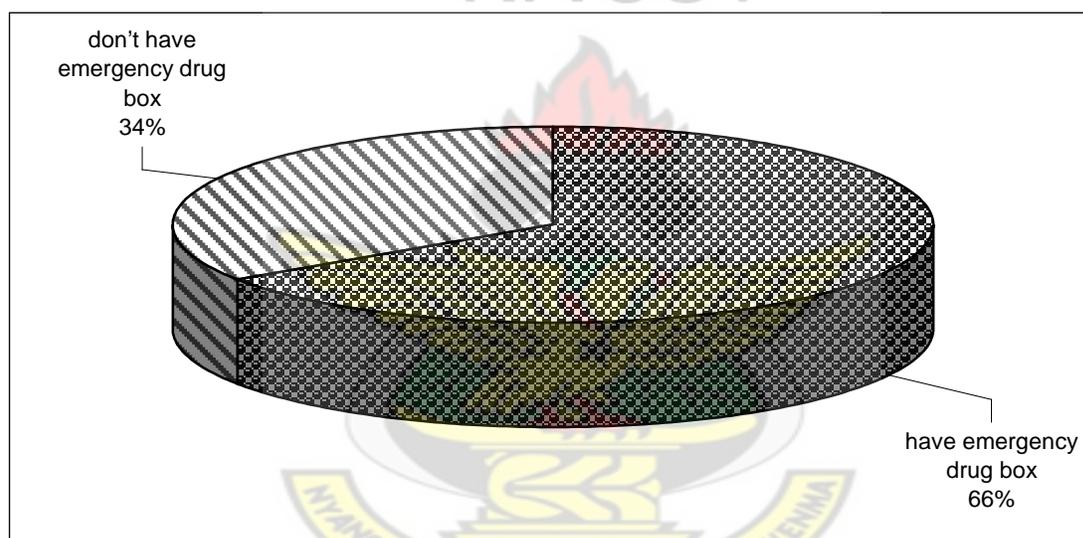


Figure 3.1 a: Proportion of wards with an emergency drug box in the hospital

Table 3.1 Reasons for not having emergency drug boxes

Reasons	Frequency (n = 10)	Percentage (%)
No request have been made	4	40.0
Emergency drug box not given to ward	4	40.0
Emergency drugs not needed	1	10.0
Patients come in with drugs for c/s	1	10.0

3.1.2. Drug List for the Emergency Drug boxes

All the 19 wards with emergency drug box had their drugs supply from the pharmacy unit. However, 7 (37%) out of the 19 did not have an emergency drug list (Figure 3.2).

Mostly the drug lists were kept in the drawer of the nurses table (Fig 3.3).

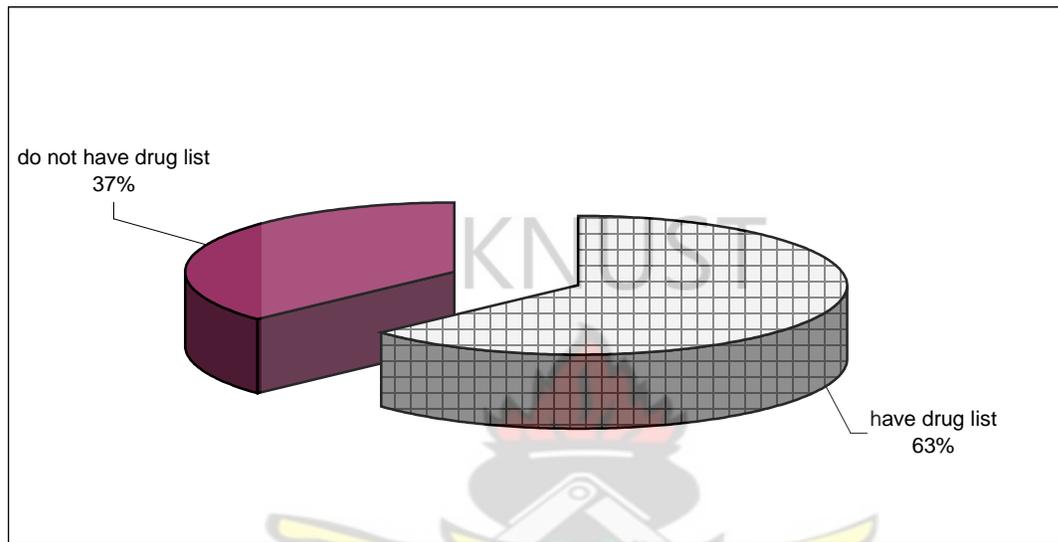


Figure 3.2: Availability of drugs list for emergency drug box at wards (n = 19)

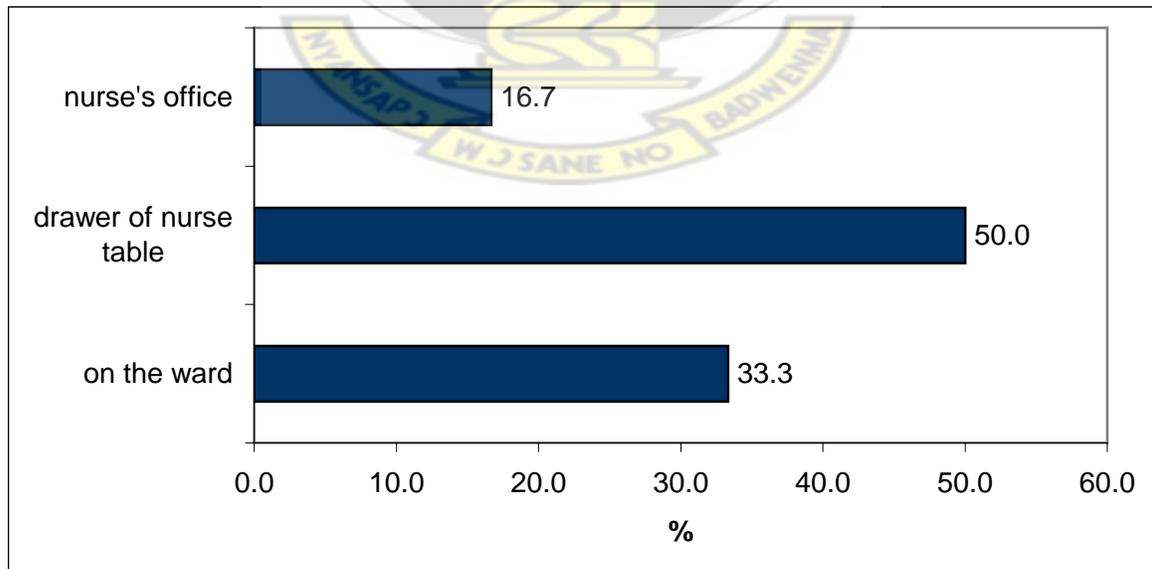


Figure 3.3 Places where drug list is kept (n = 12)

3.1.3 Location of Emergency Drug box in wards

Eighty four percent (84.2%) of the boxes were located on the ward (Figure 3.4)

Furthermore 68% of the boxes were not labeled (Figure 3.5.)

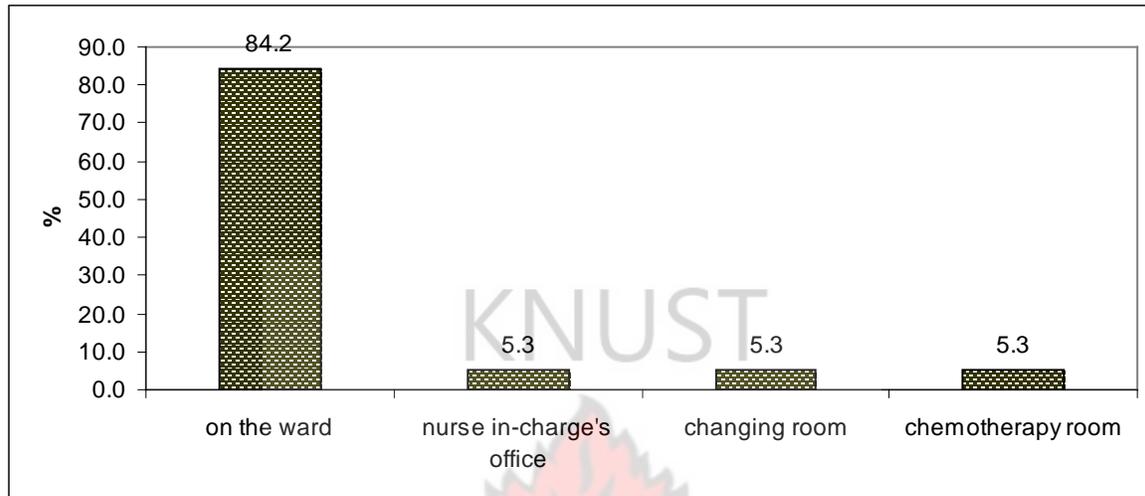


Figure 3.4: Places where emergency boxes are located

As shown in figure 3.5 below, 32% of the boxes were labelled and the rest, 68% not labelled.



Figure 3.5: Labeling of boxes (n=19)

Out of the 60 staff interviewed on the management of the emergency drug boxes, 90% were not satisfied with the state of management of the boxes and the reasons included non-replacement of drugs as indicated by 79.6% of the respondents (Table 3.2).

Table 3.2 Satisfaction with management of emergency drug box

Variables	Frequency (N = 60)	Percentage (%)
Profession		
Nurse	45	75.0
Doctor	15	25.0
Years of service		
< 5 years	23	38.3
5 years and above	37	61.7
Satisfaction with management		
Very satisfied	2	3.3
Satisfied	4	6.7
Not satisfied	54	90.0
*Reason for “not satisfied”	(n=54)	
Drugs are not replaced	43	79.6
Box is virtually empty	24	44.4
Drug list not available	31	57.4
It is difficult to access	12	22.2
Drugs are not well accounted for	17	31.5
Some drugs are expired	26	48.1

* *multiple response*

3.2 Access to emergency drug box

3.2.1. Keys to the Emergency drug boxes

Thirty two percent (32%) of keys to the emergency drug boxes in the wards were readily available (Figure 3.6). Also the majority of keys of the emergency drug boxes were kept in a container on the nurses table (57.9%) (Figure 3.7)

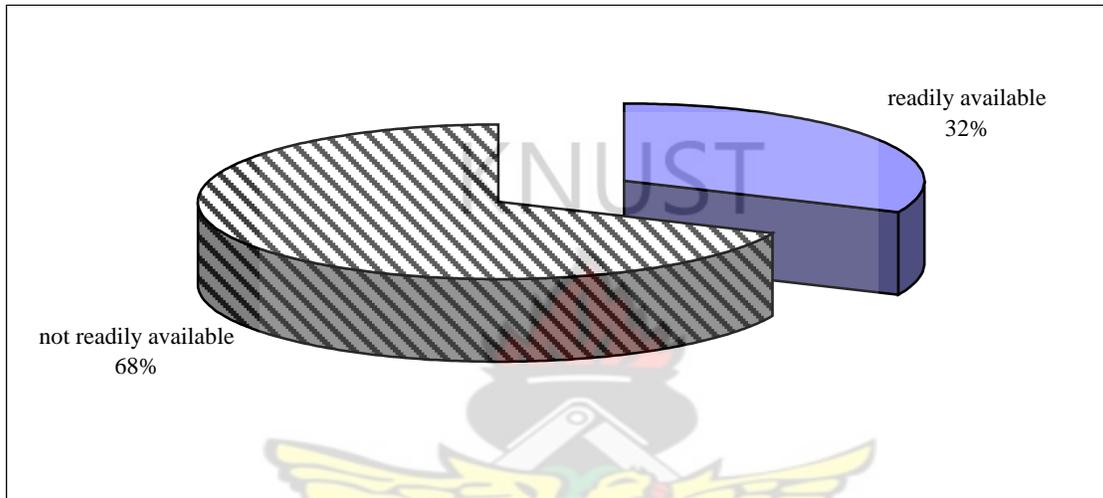


Figure 3.6: Availability of keys to emergency drug box

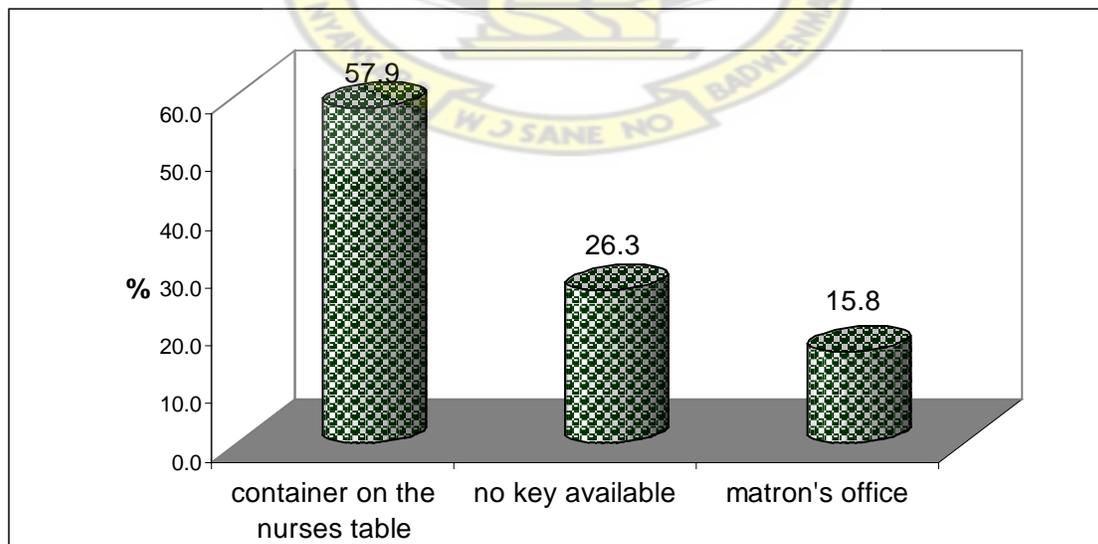


Figure 3.7. Place of keeping the keys to the emergency drug boxes

3.2.3 Users of the emergency drug boxes

Nurses were the only identified professionals who took drugs from the emergency drug boxes in the wards. 31.6% of drugs taken from the emergency drug box were replaced, and 68.4% were not replaced. All those who replaced the drugs used a doctor's prescription which was sent to the department's pharmacy unit for supply. The reasons for not replacing the drugs were attributed to pressure of work on nurses (46.2%), forgetfulness (30.8%) and lack of staff (15.3%) (Table 3.3)

Table 3.3: Users of the emergency drug boxes

Variables	Frequency (n = 19)	Percentage (%)
Users of the box		
Nurses	19	100.0
Replacement of drugs		
Replaced	6	31.6
Not replaced	13	68.4
Means of replacement	(n=6)	
By doctor's prescription	6	100.0
Reason for non-replacement	(n=13)	
Forgetfulness	4	30.8
Pressure of work on nurses	6	46.2
Lack of staff	2	15.3
Occasional shortage from pharmacy	1	7.7

3.2.3 Staff perspective on access to emergency drug box

Eighty percent of the respondents had seen an emergency box, out of which 95.8% had ever used it. 2.1% of those who had never used the emergency drug box indicated that it was very accessible as detailed in table 3.4 below.

Table 3.4 Staff perspective on access to emergency drug box

Variables	Frequency (N = 60)	Percentage (%)
Emergency cases		
Rare (< 5 cases a week)	12	20.0
Often (5 – 10 cases a week)	25	41.6
Very often (>10 cases a week)	15	25.0
Seen emergency drug box		
Yes	48	80.0
No	12	20.0
Ever used emergency drug box (n=48)		
Yes	46	95.8
No	2	4.2
Accessibility of the box (n=46)		
Very accessible	1	2.1
Accessible	6	12.5
Not accessible	39	85.4
Reason for inaccessibility of the box (n = 39)		
It was not at the ward	2	5.1
It took a long time to get it	3	7.6
The key could not be found	34	87.3
Got what was needed from the box (n=48)		
Yes	1	2.0
No	47	98.0
If no, what did you need (n = 47)		
Analgesics	31	65.9
Antacid	6	12.8
Antihistamine	7	14.9
Antibiotic	3	6.4

3.3. Monitoring of emergency boxes

Whereas 68% of the boxes were regularly (once a month) inspected, 32% were not (figure 3.8). The inspections of the boxes were conducted by pharmacist (47.4%), pharmacist and nurse (31.6%) and nurse in-charge (5.3%) (Figure 3.9)

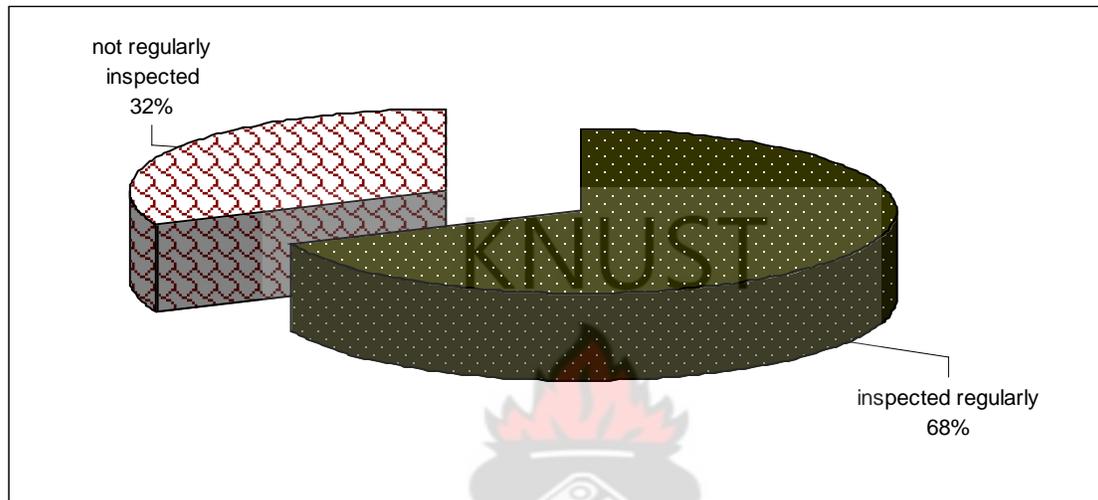


Figure 3.8: proportional distribution of boxes regularly inspected

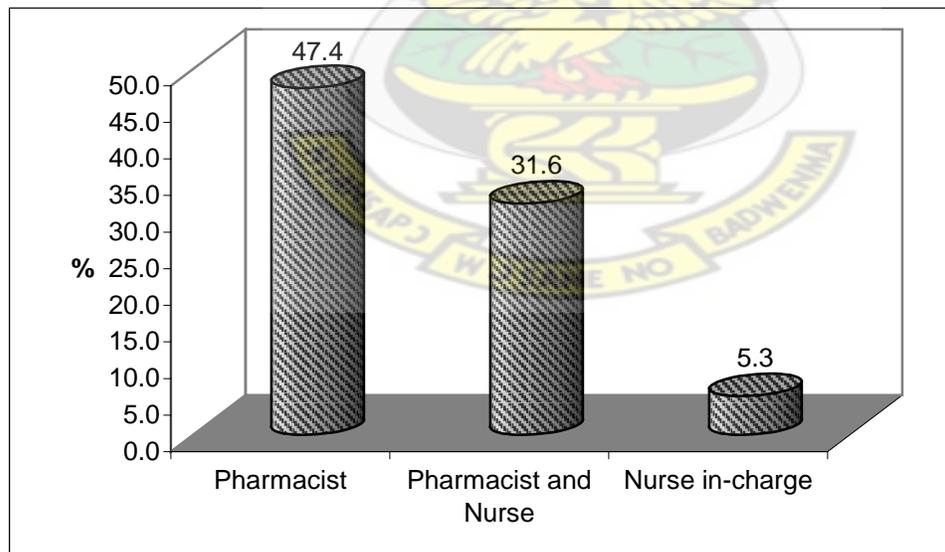


Figure 3.9: Persons who inspect the emergency drug boxes

According to the ward in-charges and the directorate pharmacist, during inspections, the items inspected are drugs (84.2%), expiration dates of contents (73.7%), stock documentation (31.6%) and drug list (15.8%). The others were labels (10.5%) and keys to the emergency drug box (5.3%).

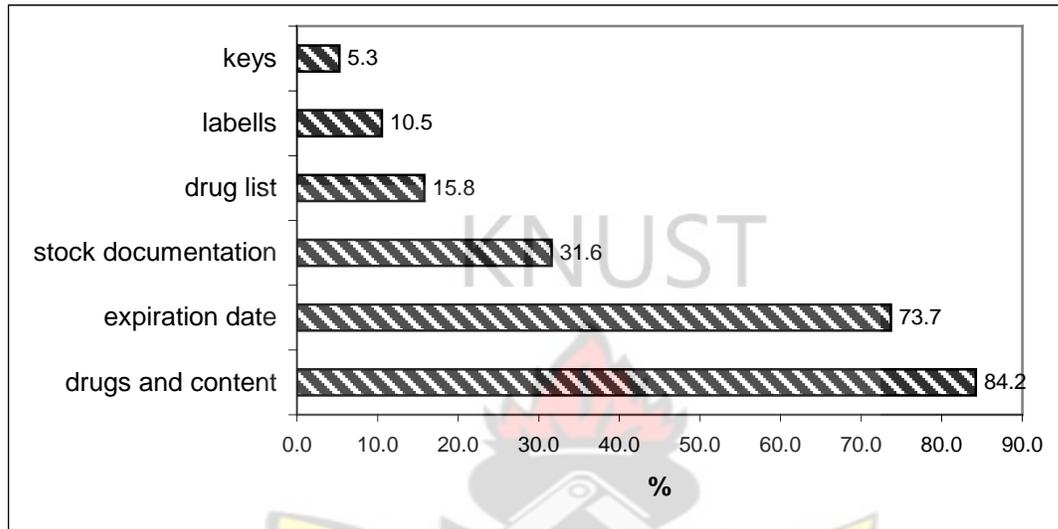


Figure 3.10: Items inspected (n=19)

When the ward in-charges and pharmacist were asked to provide evidence of inspection, only 50% indicated that some documentation is done during monitoring of the emergency drug boxes.

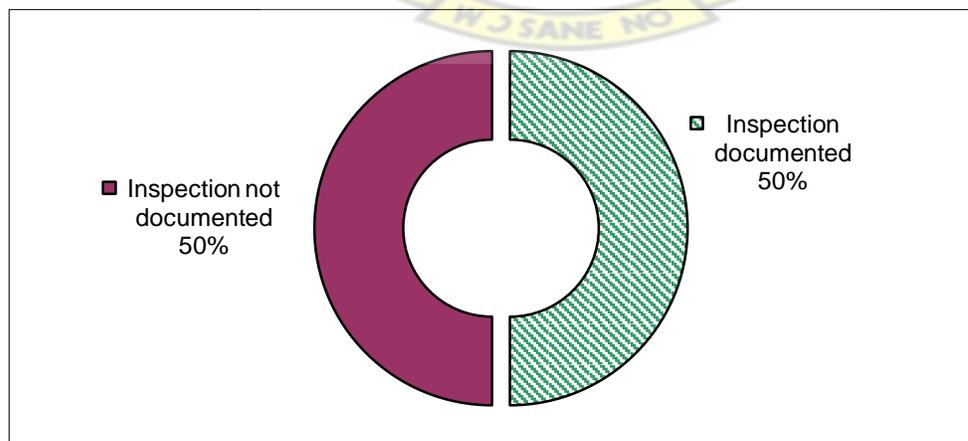


Figure 3.11 Documentation of inspection

Out of the seven wards where indications were made that documentation was done during monitoring of emergency drug boxes, only one (1) representing 14.3% could provide the documents.

Table 3.5 inspection of documentation on monitoring of emergency drug boxes

Variables	Frequency (n = 7)	Percentage (%)
Inspection document available		
Available (seen)	1	14.3
Not available (not seen)	6	85.7
Reason for “Not available”		
No book for documentation	6	100.0

3.4. Expired drugs

Pethidine was available in 57.9% of the emergency drug boxes, however 45.5% had expired (Table 3.6) Also out of the 19 emergency boxes, 63% contained expired drugs as shown in figure 3.12.

Table 3.6 List of drugs in emergency drug boxes

List of drugs	Number of emergency drug boxes (n = 19)	Percentage (%)	n (%) expired
Pethidine	11	57.9	5 (45.5)
Glucose infusion	9	47.4	-
Prednisolone	9	47.4	4 (44.4)
Diclofenac	8	42.1	2 (25.0)
Aspirin	6	31.5	5 (83.3)
Piriton	3	15.7	3 (100.0)
Benzyl penicillin	1	5.3	-
Trisilicate	1	5.3	-
Hydrocortisone	1	5.3	-
Diazepam	1	5.3	-

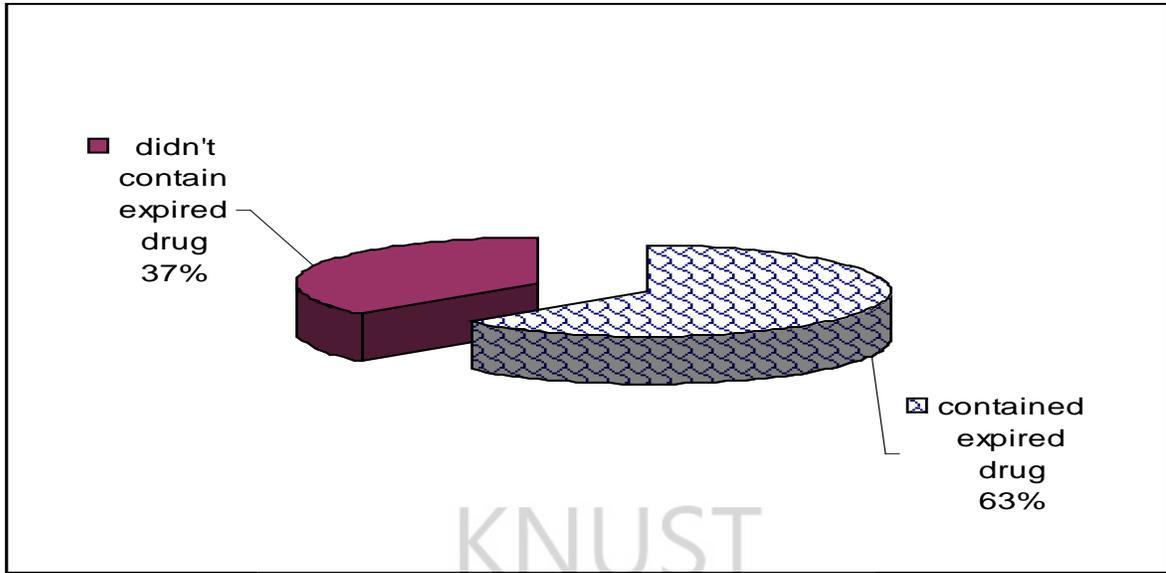


Figure 3.12 Percentage of emergency drug boxes with expired drugs (n=19)



CHAPTER FOUR

DISCUSSION

4.1. Structural arrangement for the management of emergency drug box

The structural arrangement of emergency responses in hospitals, especially referral hospitals such as KATH, should be organised in a manner to ensure adequate and rapid response to emergency cases. Instituting emergency responses at the wards of hospitals involve, among others, making available emergency drugs boxes. Even though all the wards in the hospital should have had an emergency drug box, 37% did not have it. Among the reasons given was the delay in responding to requisition for emergency drug boxes. Thus despite the recognition of the need to make available emergency drug boxes to improve quality of health services, the non response to several requisitions for emergency drug boxes at some wards is of great concern. The frustration and anxiety accompanying the non-provision of basic equipment and logistics is perceived as a contributory factor to poor health services. Obviously wards that had severally made such request had given up the cause and may respond to emergency un-prepared as per the KATH protocol. In fact, such frustration may have accounted for the situation where some of the wards ask patients to bring drugs for procedures such as elective caesarean sections as indicated by one of the wards. Under such circumstances, the services that needed to be provided to the patient may be compromised especially if the patient is incapable financially to provide the requisite emergency drugs for the procedure. The consequence could be the development of complications before or after the procedure or even death.

The directorate pharmacies are the main source of supply of drugs for the wards with emergency drug boxes hence it is important that drugs available in the emergency box are well spelt out in a drug list. In fact it is a structural requisite that all emergency drug boxes should have an emergency drug list that contains all the drugs in the box (Rampnjat, *et.al*, 2007).The majority (63.2%) of the emergency boxes did not have an emergency drug list. The implication of this is that it does not only affect the structural arrangement necessary for use of the emergency drug box, but more importantly it affects response time to emergency cases. This is because, staff who may require the use of the boxes for specific needs, would need the drug list for quick reference to ensure that what is needed is available. Therefore the lack of a drug list on the boxes questions its relevance in service provision (Rampnjato, *et.al*. 2007) and the results could be detrimental as far as the life of patients is concerned. Indeed it is more imperative that for the 34.8% emergency drug boxes with a drug list, the list is made readily available for use. It is preferred that the drug list is pasted on the emergency drug box to facilitate easy reference. Unfortunately in most of wards with emergency drug list, it is kept in the nurse in-charge's office or the drawer of the nurse's table. Both places may be considered inconvenient considering that the emergency drug list informs the content of the box and should be readily available for quick reference under emergency situations. Keeping the emergency drug list in the office of the ward in-charge is inappropriate relative to the protocol. The ward in-charges office which is always under lock and key and limited in access even among nurses, may be an improper place for keeping an emergency drug list.

The emergency drug boxes were located in the wards (84.2%), nurse in-charge's office (5.3%), changing room (5.3%) and chemotherapy room (5.3%). Keeping the emergency drug box in the ward is what is required as per protocol. Lack of documentation as to who accessed the content of the box contributed to drug shortages. Thus the arrangement of keeping the emergency box in the nurse's office is intended to prevent loss of content of the box, but not ensure easy access. The emergency box in the changing room was virtually empty but there was no documentation of the use of the content of the box.

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All emergency boxes need to be well labelled boldly for easy identification and accessibility. Even though 68% of the emergency drug boxes were well labeled 32% were not labelled. It is not surprising therefore, that even some of the health workers the majority of whom had worked in the wards for over five years had not even seen the emergency drug box.

The poor structural arrangement of the emergency boxes in the wards and its associated problems with its replenishment and access may have accounted for the indication that the arrangement was not satisfactory (90%). The lack of satisfaction in the current emergency drug management structure in the wards affects confidence of staff relative to its usefulness. The dissatisfaction is attributed to, among others, the non replacement of used drugs (79.6%), the fact that the emergency drug box is virtually empty (44.4%), drug list not available (57.4%), difficulty in accessing the box (22.2%), and the lack of documentation for drugs used (31.5%). These reasons affect directly the care that would be needed to be given to patient under emergency conditions. The non-replacement of

drugs obviously would make the emergency drug boxes empty hence when a patient requires basic medication for management; such medication would not be available. The situation is worsened when drug taken from the boxes cannot be accounted for. All the contents of the emergency drug boxes are procured hence it loss creates a financial burden for the hospital.

4.2 Access to emergency drug box

The key to the emergency drug box is pivotal to accessing it. It is required that the emergency drug box is kept under lock and key for security reasons (so that its contents are not tampered with unnecessarily) and also ensure that it is used only in emergency situations. Most of the keys to the wards with emergency drug boxes were missing (68%). Thus, though, the emergency boxes were there they could not be locked. It was only 32% of the wards that the key to the emergency boxes were available. This could infer that there is no conscious effort being made by ward in-charges, their colleagues or other staff, (i.e. doctors and pharmacists) to ensure that the emergency drug boxes are in a good state for use for the management of emergency cases. There is little concern whether the emergency box is accessible or not. Interestingly the wards that indicated that the keys were available, 26.3% of them could not make the key available. Those available kept keys either in a container on the nurses' table or in the matron's or ward-in-charge's office. These issues affect access to the contents of the emergency drug box (McCullough, 2007).

Nurses were the only identifiable professions who physically accessed the emergency drug boxes but only 31.6% replaced what they took from the box. The reason for not replacement of the drugs included forgetfulness (30.8%), pressure of work on nurses (46.2%) and occasional shortage from the pharmacy (7.7%). These excuses given could be said to be untenable and it is wondered if supervisors of such nurses took punitive steps to correct such attitudes considering the relevance of emergency drug box in the care of patients. It is believed that to a large extent standards for professionalism are being compromised in the management of emergency drug boxes.

A cross-sectional interview with staff of the wards selected showed that emergency cases are highly prevalent considering that 66.6% had 5 or more emergency cases a week. The staff (80%) had seen the emergency drug box and knowing its usefulness, 95.8% of those who had seen it had made attempt at using it but failed. Over 80% (85.4%) of those who had ever used the emergency box indicated that it was not accessible due to the fact that its keys could not be found (87.3%). This is collaborated with the observation made that most of the wards could have misplaced the keys to the emergency drug boxes.

4.3 Monitoring of emergency drug box

The claim that the boxes were inspected or monitored could be said to be non-existent. The pharmacist and the nurse in-charge know that this is their responsibility however; it has been relegated to the background. The poor monitoring and inspection of the emergency drug boxes in the wards has accounted for the loss of its content and non-

replacement of items taken from it. The pharmacist and the nurse in-charge are to examine the drugs, expiration dates, stocks documentation, and emergency drug list among others however none of these activities are conducted comprehensively. The claim that drugs (84.2%) and expiration dates (73.4%) are inspected is not supported by the fact that majority of the boxes were empty. In addition a wrong impression created that the boxes were monitored and inspected were not supported by documentation. Among the seven (7) wards that indicated that it had documentation of its monitoring activities, only one (1) representing 14.3% could provide some evidence. For the rest, 85.7% the documentation on monitoring of the emergency drug box could not be provided because books for documentation were lacking. There is certainly difficulty in documentation. It is worth noting that even in developed nations, log books in the form of registers are used in monitoring and making request on stocks required filling emergency drug box (PLHB, 2004). Corners (2006), suggested the use of customized software to enhance gathering of information for effective management and action. The electronic means of keeping data could improve on accounting, storage levels, management of expiration data and inventory as suggested by Wagner (2006). The disregard for these principles in the management of emergency drugs in the hospital could be very costly.

4.4 Expired drugs

Out of the 19 emergency boxes, 63% had drug contents that had expired. Pethidine, prednisolone, diclofenac, aspirin, piriton, benzyl penicillin and trisilicate tablets were among the drug contents in the emergency drug boxes. The majority of the drugs in the emergency drug boxes had expired, out of the 11 emergency drug boxes that

contain pethidine, 45.5% had expired, 44.4% prednisolone, 25% diclofenac, 83.3% aspirin and 100% of piriton had also expired. The danger associated with keeping expired drugs in the box is that it may accidentally be administered on patients. This can easily be avoided if there are proactive efforts by directorate clinical pharmacist in inspecting regularly the emergency drug boxes. Of course, the efforts of the pharmacist are based on the report from the nurse in-charge. Unfortunately, even at the wards, the existing emergency boxes are rarely used.

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CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

The following conclusions are deduced from the findings of the study:

- Emergency drug boxes are poorly structured at the wards of the KATH. This is because most of the emergency drug boxes: did not have a label or a drug list. If it did have a drug list it was not available or was out of reach of potential users; and the drug boxes were not available at some of the wards.
- There is poor access to the emergency drug boxes if it exists somewhere in the wards. This is because the keys to the boxes were missing, or the boxes were empty. If the box was not empty it contained some expired drugs that made its use unreliable; if the key of the emergency drug box was available it was out of reach of the user, drugs taken out were either not replaced by the nurses , not documented or not accounted for.
- There is no monitoring and inspection of the emergency drug boxes at KATH and this has contributed to its poor use. The nurse in-charge and the directorate pharmacist did not regularly inspect the boxes as they should. Lack of monitoring led to the expired drugs not being detected and some of its content not being accounted for. More importantly is the fact that there was no evidence of such monitoring or inspection exercise conducted on the boxes. The pharmacist and the

nurse in-charge had neglected the responsibility of managing the emergency drug boxes.

5.2 Recommendations

The following recommendations are therefore being made for effective management of the emergency drug boxes at KATH:

1. Management of the directorate should task the directorate pharmacist, nurse manager and nurse in-charges of the various wards to ensure that emergency drugs boxes are well placed and ready for use.
2. Nurses at the various wards should be sensitized about the need to document all transactions made relative to access to the contents of the emergency drug boxes.
3. The directorate management team should set up a committee to investigate wards who fail to account for the emergency drugs in the box.
4. The directorate pharmacist should ensure that all emergency drug boxes in the wards are well labelled and the emergency box drug list are placed at vantage points for easy reference and use by doctors and nurses. The pharmacist should also take an overall stock of the entire emergency drug box and manage all drugs that have been applied and also take the necessary steps to ensure that hospital management replenishes all empty and half empty emergency drug boxes in the wards.
5. The nurse in-charge of wards should ensure that log books are always available and used by nurses who use the emergency drug boxes. In addition, they should

- also ensure that keys to the emergency drug boxes are always kept with the most senior nurse on duty to ensure effective use of the emergency drug box.
6. The installation of customized software would assist in data collection and, inventory taking, and financial analysis of stocks .This will prevent shortages and expiry and ensure effective management of the emergency drug boxes in KATH.

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Questionnaire for Ward In-charges and Directorate Pharmacists

This study is aimed at improving the management of Emergency Drug Boxes in KATH. Please be assured that the response you provide will not be associated with you now or in the future. You are therefore assured of the secrecy and confidentiality of the information you provide. You are also assured that the information you provide will not affect your status or relations with KATH now or in the future. You are also informed that you are at will to respond to the questions or quit being interviewed without a penalty.

Ward.

1. What is your profession?

2. Do you have an Emergency drug box Yes No

3. If no why

.....
.....
.....

4. Where do you get your drugs?

5. Do you have emergency drug list? Yes No

6. If yes, please is it available for inspection Yes No

7. Where is the emergency drug list usually kept?

8. Where is the emergency drug box located?

9. Is the key to the emergency drug box available Yes No

10. Where is the key kept?

11. Who takes out the drugs from the emergency drug box in case of emergency?

Nurse Doctor Ward Assistant Pharmacist

12. Are items taken out of the emergency drug box replaced Yes No

13. If yes, how do you replace it?

.....

14. If no, give reasons?.....

.....

15. Is the emergency drug box labeled Yes No

16. Is the emergency drug box and its content inspected periodically? Yes No

17. If yes, who does the inspection?

Nurse Doctor Ward Assistant Pharmacist

18. What about the emergency drug box is inspected?

.....

.....

19. Do you document on each inspection? Yes No

20. If yes, is the record available for inspection? Yes No

21. If NO, why?

.....

Questionnaire

Health Workers

This study is aimed at improving the management of Emergency Drug Boxes in KATH. Please be assured that the response you provide will not be associated with you now or in the future. You are therefore assured of the secrecy and confidentiality of the information you provide. You are also assured that the information you provide will not affect your status or relations with KATH now or in the future. You are also informed that you are at will to respond to the questions or quit being interviewed without a penalty.

1. Directorate.....

2. Profession.....

3. How many years have you been working in this directorate?.....

4. How often do you encounter emergency cases in the course of your work?

1. Rare (< 5 cases a week)

2. Often (5 – 10 cases per week)

3. Very often (more than 10 cases per week)

5. Have you ever seen an emergency drug box in the wards of this directorate?

1. Yes

2. No

6. Have you ever used the emergency drug box in this directorate?

1. Yes

2. No

7. If yes, how accessible was the emergency drug box?

1. Very accessible

2. Accessible

3. Not accessible

8. If not accessible please state the main reason

9. If accessed, were you able to get what you needed?

1. Yes

2. No

10. If no, what did you need?

1. Analgesics

2. Antacids

3. Antihistamine

4. Antibiotics

