A DESCRIPTION OF GUIDELINE UTILIZATION IN MANAGING THIRD TRIMESTER ANTEPARTUM HEMORRAGE AT GARISSA PROVINCIAL GENERAL HOSPITAL

A RETROSPECTIVE STUDY

A RESEARCH DISSERTATION SUBMITTED FOR MASTER OF MEDICINE IN OBSTETRICS AND GYNECOLOGY

PRINCIPAL INVESTIGATOR

Dr. Rosa Chemwey Ndiema, M.B.Ch.B,

Post graduate student, Department of Obstetrics and Gynecology, School of Medicine, College of Health Sciences, University of Nairobi.

Reg.no. H58/64732/2010

SUPERVISOR

1. Prof. James N. Kiarie, *M.B.Ch.B,* M.med.*Obstetrics and Gynecology, M.P.H*

Associate Professor, Department of Obstetrics and Gynecology, School of Medicine, College of Health Sciences, University of Nairobi.

AUTHORS

1. Dr. Rosa Chemwey Ndiema M.B.Ch.B.;

Senior House Officer, Department of Obstetrics and Gynecology, School of Medicine, College of Health Sciences, University of Nairobi.

2. Prof. James N. Kiarie, M.B.Ch.B, MMed. Obstetrics and Gynecology, M.P.H;

Associate professor, Department of Obstetrics and Gynecology, School of Medicine, College of Health Sciences, University of Nairobi. Consultant Obstetrician and Gynecologist, Kenyatta National Hospital.

3. Dr. Amos Ayunga M.B.Ch.B, MMed. Internal Medicine;

Medical Superintendent, Garissa Provincial General Hospital.

4. Dr. Musila M.B.Ch.B, MMed. Obstetrics and Gynecology;

Consultant Obstetrician and Gynecologist, Garissa Provincial General Hospital.

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CERTIFICATE OF SUPERVISION

This is to certify that this Thesis was developed under my guidance.

1. Prof. James N. Kiarie, *M.B.Ch.B,* M.med. *OBS/GYN, M.P.H;*

Associate Professor, Department of Obstetrics and Gynecology,

School of Medicine, College of Health Sciences, University of Nairobi.

Consultant obstetrician and gynecologist, Kenyatta National hospital.

Signature……Date…….

PRINCIPAL RESEARCHER

Dr. Rosa Chemwey Ndiema, *M.B.Ch.B,*

Post graduate student, Department of Obstetrics and Gynecology, School of Medicine, College of Health Sciences, University Of Nairobi.

Reg.No.H58/64732/2010

Signature……Date……

DECLARATION

I, the principal researcher declare that this is my original work and that this dissertation has never been presented to any university for award of a degree.

DEDICATION

This book is dedicated to my husband and daughter for their unfailing support towards my education.

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Sincere appreciation to my supervisor Prof. James Kiarie for remarkable work in mentoring me through this study, for his patience and support to bring a deeper understanding on what research work such as this one entails.

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LIST OF ABBREVIATIONS

ANC - Ante-natal clinic

APH – Ante Partum Hemorrhage

ARM- Artificial Rupture of Membranes

DALY- Disability Adjusted Life Years

EDD – Estimated Date of Delivery

FANC - Focused ante-natal care

FP - Family planning

GBD - Gestation By Dates

HCW- Health Care Workers

LMP – Last Menstrual Period

KEPH - Kenya Essential Package for Health

NHSSP II- second National Health Sector Strategic Plan

KDHS - Kenya Demographic and Health Survey

KNH - Kenyatta National Hospital

MDG - Millennium Development Goals

MMR - Maternal Mortality Ratio

MOH - Ministry Of Health

MOPHS - Ministry Of Public Health and Sanitation

MOMS - Ministry Of Medical Services

PGH – Provincial General Hospital

PPH- Post Partum Hemorrhage

PI- Private Investigator

UN - United Nations

UNFPA - United Nations Population Fund

WHO - World Health organization

ABSTRACT

Introduction: Hemorrhage is the leading cause of maternal mortality in Kenya and globally, currently accounts for 34% maternal deaths in Africa (Khan KS et al Lancet 2006).

Objective: To describe gaps in Kenya National guidelines utilization in managing ante partum hemorrhage in 3rd trimester and compare pregnancy outcomes in cases managed according to the guidelines and those where guidelines were not followed.

Methodology: Mixed methods study with cross sectional survey of adherence to guidelines among patients managed for APH and qualitative Key Informant Interviews (KIIs) of Halth workers. Data on guideline adherence were collected through an audit of medical records of patients admitted with APH while health worker perspectives on APH guidelines were obtained through KIIs. Guideline adherence was determined as composite of identification of features and causes of 3rd trimester APH, appropriate pelvic examination and proper monitoring and management of ruptured uterus. Association between guideline adherence and independent variables were determined using chi-square tests.

Results: Sixty (98.4%) patients had at least one of the guideline identified presenting complaints. Placenta praevia in 27.9% and placenta abruption 26.2%. Speculum examination was done in 78.7% whereas signs of ruptured uterus were identified in 18% of whom 54.5% had both laparatomy and blood samples taken. Delivery plans were documented for 55 patients with regular feto-maternal monitoring done in 52.5% while 50.8% had favourable outcomes. Based on above results, 36.1% of the cases were assessed to have been managed with good adherence to guidelines . Responses from 19 KIIs established high levels of

awareness of the existence of guidelines, with utilization challenges attributed to resource inadequacies.

Conclusion and Recommendation: Clinicians are aware and trained on APH guidelines, but adherence practices are still low. Therefore, continuous appraisal of clinical practices, availing equipment, facilities and supplies to reinforce adherence is recommended.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

The Ministry of Medical Services (MOMS) clinical guidelines for level 4-6 hospitals chapter 53 recommends vaginal delivery in third trimester APH if bleeding persists, gestational age more than 36 weeks, minor degree placenta praevia, patient in labour and/or presentation is favourable for vaginal delivery.

Caesarean section delivery is recommended for excessive bleeding, gestational age more than 36weeks and a major degree of placenta praevia.

For revealed type of abruption placenta; conservative management is recommended if bleeding stops or if is minimal, and if there is need to prolong pregnancy and foetal condition is stable.

If bleeding persists, and or if foetal condition is unstable regardless of gestation a double setup pelvic examination in theatre is to be done. It thereafter recommends Artificial Rupture of Membranes (ARM) if in labour or abdominal delivery if bleeding excessive compromising maternal wellbeing, there is severe placenta praevia or labor complication.

All this management is to be instituted in the background of hemodynamic stability and secured airway.

In guideline utilization, an **obstacle** (also called a **barrier** or a **stumbling block**) is an object, thing, action or situation that causes an obstruction. There are, therefore, different types of

obstacles to guideline utilization, which can be physical, economic, bio psychosocial, cultural, political, technological or even military. In this study an obstacle would include resource unavailability, lack of or inadequate know how and skills and socio cultural barriers.

An **outcome** is a review of the end results of health services that takes patients' experiences, preferences, and values into account—is intended to provide scientific evidence relating to decisions made by all who participate in health care. In this study, a good outcome encompasses a live birth/foetus, short hospital stay which is 24hours after vaginal delivery and 72 hours after caesarean delivery, and a well and satisfied mother. Adverse outcome includes maternal mortality, anaemia, foetal malpresentation, postpartum hemorrhage, shock, low birth weight, blood transfusion, stillbirth and asphyxia.

Studies in implementation science done on general practitioners (GPs) in the Netherlands noted that- they did not prescribe drugs according to the national guidelines in about one third of cases, and this figure has stayed fairly constant during the last few years (www.implementationscience.com). In addition, levels of adherence vary largely between practices and between diagnoses. In western Kenya about 66- 88% of midwives cannot make a diagnosis of APH and majority of them do not perform speculum examination in cases of APH. (Division of Reproductive Health- Kenya)

1.2 STATEMENT OF THE PROBLEM

Adherence to guidelines is known to improve outcomes. Operations research studies show suboptimal guideline utilization due to lack of guideline availability, lack of knowledge and individual preferences/experiences (www.implementationscience.com).

In Kenya, study on use of guideline in APH management has not been done and an assessment of adherence and linkage to outcomes would provide important baseline information for future training and guideline roll out.

1.3 RATIONALE

MDG 5 addresses the issue of maternal mortality. Globally, the burden of hemorrhage is on the decline but in Africa still ranks highest at 99% compare to the West at 1%. Moreover Sub Saharan Africa accounts for 60% of cases. Kenya's vision 2030 aims to reduce this mortality by reducing inequalities in health care service delivery to both the rich and the poor.

Hemorrhage remains the major cause of maternal mortality which implies management inadequacies still exist either due to patient, institution or management factors. Despite there being no baseline data on guideline use in management of AntePartum Hemorrage, regular evaluation of adherence to management protocols, as well as identifying management deficiencies in protocols is a point to start for continual improvement of health care delivery.

Of note is that AntePartum Hemorrhage (APH) usually precedes Postpartum hemorrhage and therefore its prevention plays an important role.

In addition, North Eastern Province of which Garissa PGH is main referral institution has the highest maternal mortality ratio in Kenya at between 1000-1300/100,000 live births hence making an appropriate study site.

1.4 RESEARCH QUESTIONS

Are Health Care Workers (HCW) at Maternity ward in Garissa Provincial Genaral Hospital (PGH) adhering to Ministry Of Health (MOH) guidelines in managing third trimester Antepartum Hemorrage (APH)

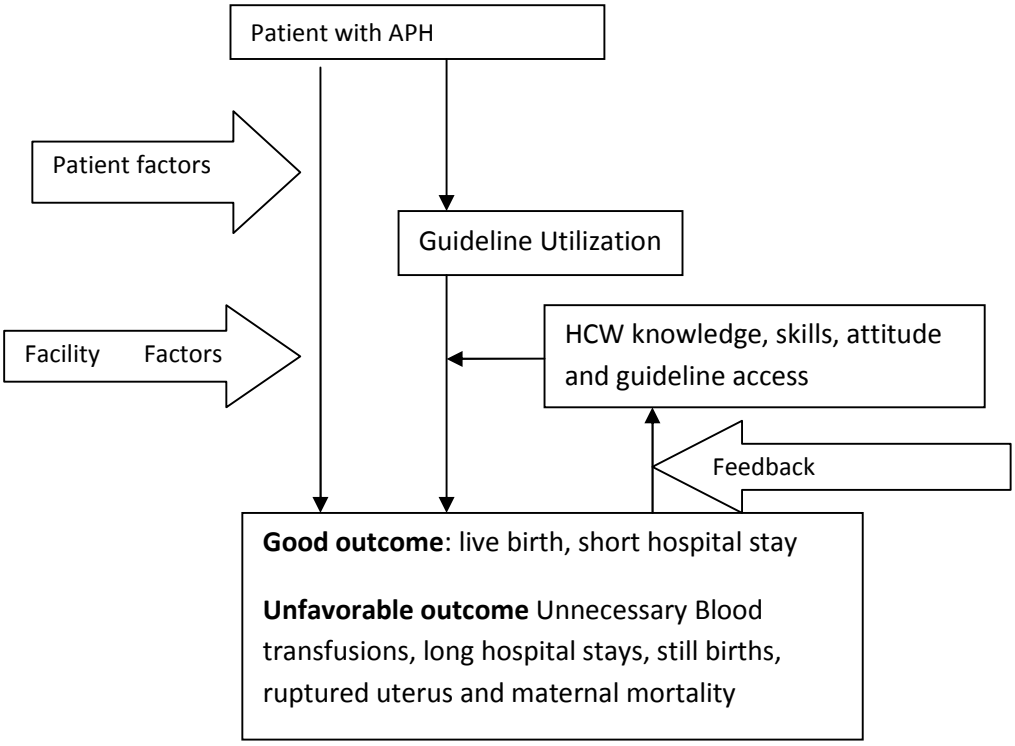
1.5 BROAD OBJECTIVE

To evaluate adherence to MOH guidelines by HCW in management of third trimester APH at Garissa PGH

SPECIFIC OBJECTIVES

1. To determine awareness on the MOH guidelines by HCW on management of 3rd trimester APH
2. To determine perception of the MOH guidelines by HCW on management of 3rd trimester APH
3. To relate the management of third trimester APH to the prescribed standard procedure(compare outcomes in those who guideline was adhered to and those who guidelines not adhered to i.e. maternal mortality, stillbirth, asphyxia, blood transfusion, near miss for adverse outcomes and well baby and mother for favourable outcomes)

1.4 CONCEPTUAL FRAMEWORK



1.6 SIGNIFICANCE OF THE STUDY

Hemorrhage accounts for 34% of maternal deaths in Africa and is most common cause of maternal death in Kenya and globally (Khan et al 2006,Lancet).

North Eastern province of Kenya has the highest maternal mortality ratio 1000-1300/100,000 live births (KDHS 2008-09).

The importance of this study is to describe uptake of APH guidelines by clinicians and factors hindering this uptake and subsequently make recommendations on practice expectation gaps.

1.7 LIMITATION OF STUDY

- The study will entirely be based at Garissa Provincial General Hospital leaving out HCW from other facilities which could potentially limit generalizability of findings. Other facilities might have unique challenges from Garissa PGH
- Insufficient documentation where the sources of information will be from records of patients previously treated.

CHAPTER 2

LITERATURE REVIEW

2.1 Maternal and Neonatal Health

Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period. Maternal health is divided into two major components, to reduce maternal mortality ratio and to achieve universal access to reproductive health; both targets to be achieved by 2015 (UN, 2000). Information available shows that most maternal deaths are avoidable with use of skilled care during pregnancy, child birth and postnatal period. Achieving universal access to reproductive health entails more women receiving antenatal care, bridging inequalities in care during pregnancy, and expanding the use of contraception to all women (UN, 2000).

Maternal mortality is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes (WHO 1998).

Globally, an estimated 287 000 maternal deaths occurred in 2010, a decline of 47% from levels in 1990. Sub-Saharan Africa (56%) and Southern Asia (29%) accounted for 85% of the global burden (245 000 maternal deaths) in 2010.The global MMR in 2010 was 210 maternal deaths per 100 000 live births, down from 400 maternal deaths per 100 000 live births in 1990. The MMR in developing regions (240) was 15 times higher than in developed regions

(16). Sub-Saharan Africa had the highest MMR at 500 maternal deaths per 100 000 live births, while Eastern Asia had the lowest among MDG developing regions, at 37 maternal deaths per 100 000 live births (WHO,UNFPA,World Bank and UNICEF estimates: Trends in Maternal Mortality 1990-2010).

Nationally, maternal mortality has remained a challenge over the last two decades. In 1998 Kenya recorded a national maternal mortality ratio of 590 deaths per 100, 000 live births (KDHS, 1998) while in 2003 maternal mortality ratio was recorded as 414 deaths per 100,000 live births (KDHS, 2003). In 2005 the WHO/UNICEF/UNFPA/World Bank estimated it at 560 maternal deaths per 100,000 live births (WHO, 2007) while in 2009 it was estimated at 488 deaths per 100, 000 live births (KDHS, 2008-09).

Maternal mortality can be attributed to direct and indirect causes. Direct causes include maternal hemorrhage, sepsis, pre-eclampsia and eclampsia, obstructed labour and abortion (AbouZahr, 2003; WHO, 2005). Among the indirect causes of maternal death are diseases that complicate pregnancy or are aggravated by pregnancy, such as malaria, anaemia and HIV (WHO, 2005).

Due to the huge global burden of maternal deaths, world leaders came together at United Nations Headquarters in New York in the year 2000 to adopt the United Nations Millennium Declaration, committing their nations to a new global partnership to reduce extreme poverty and setting out a series of time-bound targets - with a deadline of 2015 - that have become known as the Millennium Development Goals (MDGs). MDG number five specifically addresses maternal health tackling issues like maternal mortality ratio, proportion of births attended by skilled health personnel, contraceptive prevalence rate, adolescent birth rate,

antenatal care coverage and unmet need for family planning. (United Nations Millennium Declaration,2000). MDG 5 aims to reduce maternal mortality ratio by 75% between 1990 and 2015 noting that most maternal deaths are preventable when there is access to adequate reproductive health services, equipment, supplies and skilled healthcare workers.

In line with UN Development Group objectives, Kenya has rolled out MDG Acceleration Framework (MAF) to accelerate progress on off-track MDGs. The MDGs chosen in Kenya are 5 (improve maternal Health) and part of 4 (reduce child mortality).

In addition, maternal and newborn health national plans (road map) assessment concluded that if we are to make serious progress in reducing maternal and neonatal mortality and morbidity every national map must be built on solid situational analysis that provide adequate baseline data from which to measure progress on all the MDG 5 indicators. (UNFPA, 2009)

According to MAF, high priority interventions have been identified for maternal and child health from existing national strategies and programmes. The interventions are along the continuum of care from family planning, antenatal services, delivery, post-abortion care, newborn care, post-partum and postnatal care. These interventions are already being carried out. The key bottlenecks identified include: weak health system in terms of numbers and skills of health professionals available, particularly at lower level health facilities; low demand for maternal health services as reflected in low patronage of skilled birth attendants; inadequate resources; and poor policy environment. Significant regional variations call for context-specific solutions that address maternal health issues in a responsive manner. Some of the preliminary solutions include increasing the numbers and skills of health personnel,

provision of lower level facilities and commodities, improving the referral system, strengthening demand for health services and improving the policy environment.

2.4 Ante partum Hemorrhage

Maternal hemorrhage consists of bleeding from the genital tract during pregnancy (ante partum), during or after the delivery of the infant (intra- and postpartum). Although in developed countries ante partum hemorrhage is no longer a major cause of maternal mortality, it is still an important cause of maternal and perinatal morbidity. By contrast, postpartum hemorrhage continues to be a major cause of maternal death both in the developing as well as in the developed world.

The causes of obstetric hemorrhage differ, depending on whether the hemorrhage occurs ante partum, intra- or postpartum. Ante partum hemorrhage is caused in approximately half of the cases by placenta praevia or placental abruption. In the rest of the cases no precise cause can be identified (hemorrhage of uncertain origin). The consequences of bleeding depend on the amount of blood loss, the previous health state of the mother and the availability of treatment (uterotonics or blood transfusions). Postpartum hemorrhage is almost always preceeded by Antepartum hemorrhage, as such prevention and adequate management of antepartum hemorrhage is important.

Maternal hemorrhage is ranked 59th in Global Burden of Disease (GBD 1990) in terms of DALYs and its burden represented 0.3% of all conditions and 11.9% of the burden of all maternal conditions (WHO 2003)

Kenya's North Eastern Province (NEP) records the highest MMR estimated at between 1000-1300/100,000 live births with majority attributed to hemorrhage KDHS 2008-9.It is therefore paramount to assess APH as a contributor, in terms of challenges and outcomes faced in managing it. In 2010 Garissa PGH had a total 3200 deliveries and 21 mortalities with a crude death rate of 36.7/1000 captured in the mortality report.

Implementation Science

A *guideline* is a statement by which to determine a course of action. It aims to streamline particular processes according to a set routine or sound practice.

Clinical practice guidelines are commonly regarded as useful tools for quality improvement. However, their impact on clinical practice is not optimal. Several reviews

have shown that guidelines have only been moderately effective in changing the process of care, and that there is much room for improvement. For instance, general

practitioners (GPs) in the Netherlands did not prescribe drugs according to the national guidelines in about one third of cases, and this figure has stayed fairly constant during the last few years (www.implementationscience.com). In addition, levels of adherence vary largely between practices and between diagnosis.

Hemorrhage is the leading direct cause of maternal mortality accounting for 25% of all maternal deaths. APH complicates 2-6% of all pregnancies. A report on confidential enquiries into maternal deaths in South Africa (1998) listed APH as contributing 4.8% of the primary causes of maternal death. In a baseline study in Western Province of Kenya, the most frequent sign of APH reported by the different HCW was the amount of external bleeding

ranging from 67% of registered midwives to 88% of registered community health nurses. However few of the HCW used speculum in examination of patients with APH. The reported action taken for patients with APH reflects poor quality of care (division of reproductive health- Kenya)

In Kenya, clinical guidelines for diagnosis and treatment of common conditions in Kenya has been developed, latest volume released for dissemination in 2010 to lowest level of health care. There has not been baseline data as to whether or not the guidelines are being implemented and to what extent and the challenges encountered in the same. This study looks into ante partum hemorrhage as one the common conditions, its diagnosis and management at one of the provincial government health care facility

CHAPTER 3

METHODOLOGY AND MATERIALS

STUDY DESIGN

This is a prospective study design that uses both qualitative and quantitative data collection method.

STUDY SITE

The study was carried out at Garissa Provincial General Hospital which is the main referral hospital in North Eastern Province and neighbouring districts of Isiolo, Mwingi and Tana River district. It is also a main referral facility for parts of Somalia.It records one of the highest MMR. It has an in- patient bed capacity of 171, with maternity ward having 18 bed capacity. It provides prenatal services and has 6 antenatal beds with yearly occupancy of a less than 100%. It also has 4 delivery beds with working resuscitation equipment though it has a wrong sized Bag valve mask (BVM). In addition there is a functional theatre for caesarean sections which is not fully dedicated to maternity. The maternity staffs includes 2 consultant obstetrician/gynaecologists, 13 certificate/diploma midwives, 2 medical officers, 2 medical officer interns and 2 clinical officer interns (PMOs Office 2010)

STUDY POPULATION: Included maternity ward medical staff and 61 medical records of mothers admitted with 3rd trimester APH in the last 4 years (since 2007,last published guidelines) Key informants will be qualified midwives, medical officers, clinical officers and consultant obstetrician/gynecologists. Medical records of mothers admitted with 3rd trimester APH will be reviewed.

To obtain data a list of patients with an admission diagnosis of 3rd trimester APH was obtained from admission book at maternity ward. The in-patient numbers of those patients was compiled into a list and 100 selected at random. 61 records of selected patients was obtained from the medical records department, remaining 39 were missing. Investigator perused though records of patients diagnosed and managed for 3rd trimester APH, fill in the data extraction sheet. (Annex 1). From the list of staff working in the maternity 1 consultant obstetrician/gynecologist, 6 midwives, 1 medical officer and 2 interns were interviewed. The PI approached each key informant and informed him/her about the study and obtain consent (appendix 1). The Key informants was interviewed at their own convenience and questionnaire filled out. Thereafter, themes are to be combined and detailed into units of meaning to form a consistent and coherent description. Each theme would represent an analysed account result, faithfully representing the views of the participant Furthermore, a synthesis by means of general description of the various informant views from a description towards the concept to one of higher level of generalization will be employed.

SAMPLE SELECTION: The sampling technique was simple random sampling of health records of patients managed for 3rd trimester APH in the maternity ward since 2007 selected at random from a list of in-patient numbers whose admission diagnosis was 3rd trimester APH. All qualified HCW at maternity ward were interviewed.

SAMPLE SIZE: The required sample size will be 87 cases of 3rd trimester APH. Formula used to select number of APH cases for review as shown (corrected Fischer's formula)

$$\frac{Z^2 * (p) * (1-p)}{c^2}$$

Where:

Z = Z value (e.g. 1.96 for 95% confidence level)
p = Proportion of cases where guidelines adhered to, assumed to be 50% because of no baseline data to work with.
c = Accuracy with which to estimate proportion of cases where guidelines adhered to (+ or - 10%)

21 key informants working at maternity ward conveniently selected will be interviewed which represents all maternity health care workers.

INCLUSION CRITERIA:

HCW

HCW managing pregnant women with 3rd trimester APH in maternity ward during the last 2 years

Patients admitted with 3rd trimester APH

Admission diagnosis of 3rd trimester APH

Admission in the last 2 years

EXCLUSION CRITERIA

HCW

Medical/nursing students practicing at Maternity ward after their identification was established verbally

Patients admitted with 3rd trimester APH

File cannot be located. Missing files will not be assessed. Sensitivity analysis will be done assessing missing files as outliers.ie if all missing files were mortalities how significant is it.

INSTRUMENTS OF DATA COLLECTION: *Primary Data* collections- From review of medical records of previously managed patients with diagnosis of 3rd trimester APH

Secondary data will be obtained via key informant interviews using interview guide (appendix 3).

3.11 MINIMIZATION OF ERRORS AND BIAS

Training- PIs were trained on data collection for both qualitative and quantitative techniques. These were medical records staff only.

***3.12 DATA PROCESSING AND ANALYSIS*:** Data was entered into SPSS 17, checked for completeness, errors and outliers. Summarised data was represented in tables, graphs and charts.

Data analysis was conducted to determine strength of association between dependent and independent variables using chi- square test for categorical variables and students t-test for continuous variables.

Strict adherence levels were calculated as all steps as outlined in the guideline was followed. Correlation of data was also analyzed between different variables.

3.13 ETHICAL CONSIDERATION

This study was submitted to ethics review board of UON/KNH for review and approval. The study was not harmful to participants and they were free to withdraw from the study at any point if they deemed so. However the participants were explicitly informed on the purpose of the study, who are involved in it and the benefits of the study. Participants did not receive any form of financial or material inducement. Confidentiality of subjects and patient identifiers were upheld. Participants read the consent form, or had it read to them in language they understood before taking part in the study. Hence, all participants had to give informed consent.

CHAPTER 4

RESULTS

Patient characteristics

Sixty-one women admitted to Garissa Provincial Hospital with 3rd trimester ante partum hemorrhage from January 1st 2007 to July 31st 2012 were included in the study. The average age of patients was 30.8 years (SD = 10.4) and the age range was 16 to 62 years. Most patients were 25-29 years (20.3%) and 30-34 years (20.3%), while the rest 7 (11.9%) were 18 years and below. Figure 1 shows the percent age distribution for all the patients.

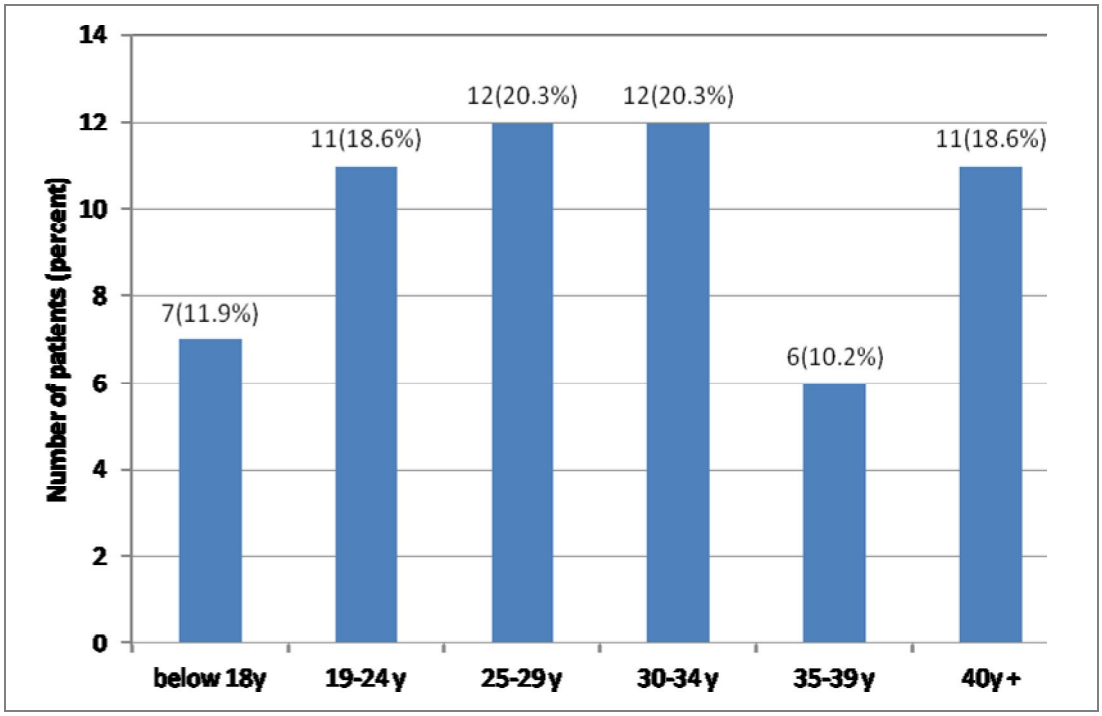
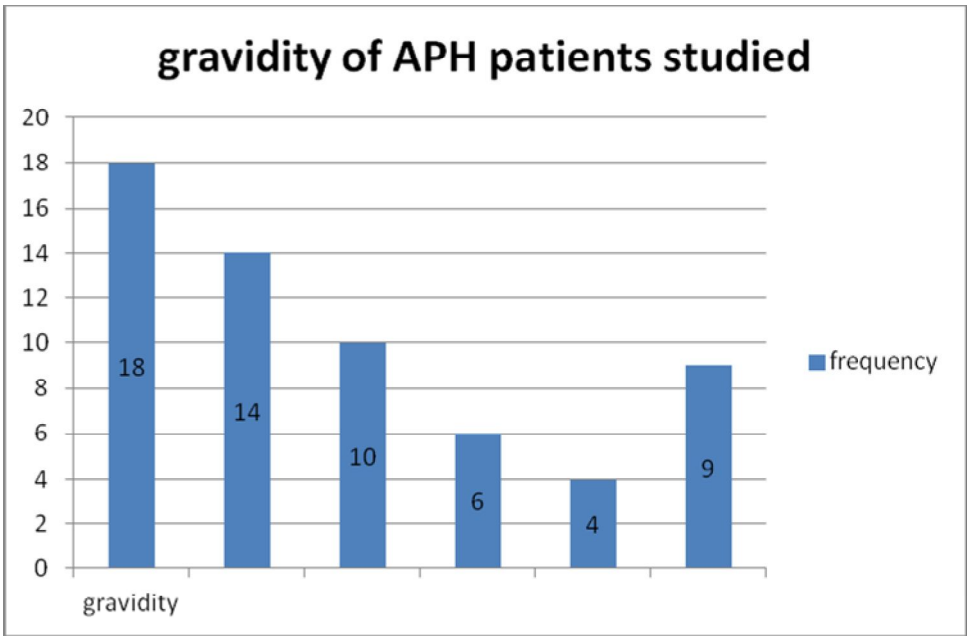


Figure 1: Percent distribution of patients with 3rd trimester APH at Garissa PGH

Obstetric history

Based on record review, the gravidity of patients ranged from 1 to 17. The median gravidity was 4 (IQR = 2 to 7) and most patients were either gravida 1 or gravid 2 (29.5%). Twenty three percent of patients were gravid 3 or 4. Table 1 shows that the distribution of gravidity.

Table 1: Gravidity of third trimester APH patients admitted to Garissa PGH



Outcome

There were a total of 13 (21.3%) maternal deaths out of a total of 109 deaths documented in the study period, 23 (37.7%) still births, and 17 (27.9%) maternal morbidity. Most cases of maternal morbidity were related to low hemoglobin (less than 10g/dl) occurring in the postnatal period. Table 3 shows that these outcomes commonly occurred together in patients with APH and most (42.6%) deliveries resulted in live births with no maternal morbidity.

Table 3: Co-related outcomes of third trimester APH among admissions to Garissa PGH

	Frequency (n)	Percent (%)
Third trimester APH outcome		
Live birth with no maternal morbidity	26	42.6
Live birth with maternal morbidity	4	6.6
Live birth with maternal mortality	1	1.6
Stillbirth with no maternal morbidity	7	11.5
Stillbirth with maternal morbidity	6	9.8
Stillbirth with maternal mortality	12	19.7
Total	56	92%

Of note is that deliveries were not conducted in 5 patients since it was not indicated.

From Table 3.1, there was more live outcomes across the board but no statistical significance noted between maternal and neonatal outcomes p= 0.541

Table 3.1 Comparison of maternal and neonatal outcomes

Adverse outcome	Live birth	Still birth
No maternal complication	26	7
Maternal morbidity	4	6
Maternal mortality	1	12
Total	31	25

Findings of *t*-tests showed that there was a statistically significant association between maternal age and delivery outcome with poorer delivery outcomes associated with increasing maternal age. In particular, the mean age of mothers delivering live births with no morbidity (25.3 years) was significantly lower than that of mothers who had had other outcomes (35.2 years), $p < 0.001$. Stillbirths with maternal mortality also appeared to occur in older mothers (mean = 34.7 years) but this association was not statistically significant ($p = 0.15$).

Stillbirths with maternal morbidity was also significantly noted to occur more in advanced maternal age (Mean 38.3 years) with a p value 0.06.

Table 4: Delivery outcomes in 3rd Trimester APH according to maternal age

	Third trimester APH outcome		T statistic	P value
	Yes (mean age± SD)	No (mean age±SD)		
Live birth with no maternal morbidity	25.3 ± 6.2	35.2 ± 10.9	4.12	< 0.001
Stillbirth with maternal morbidity	38.3 ± 9.1	30 ± 10.2	-1.90	0.06
Stillbirth with maternal mortality	34.7 ± 11.8	29.9 ± 9.9	-1.45	0.15

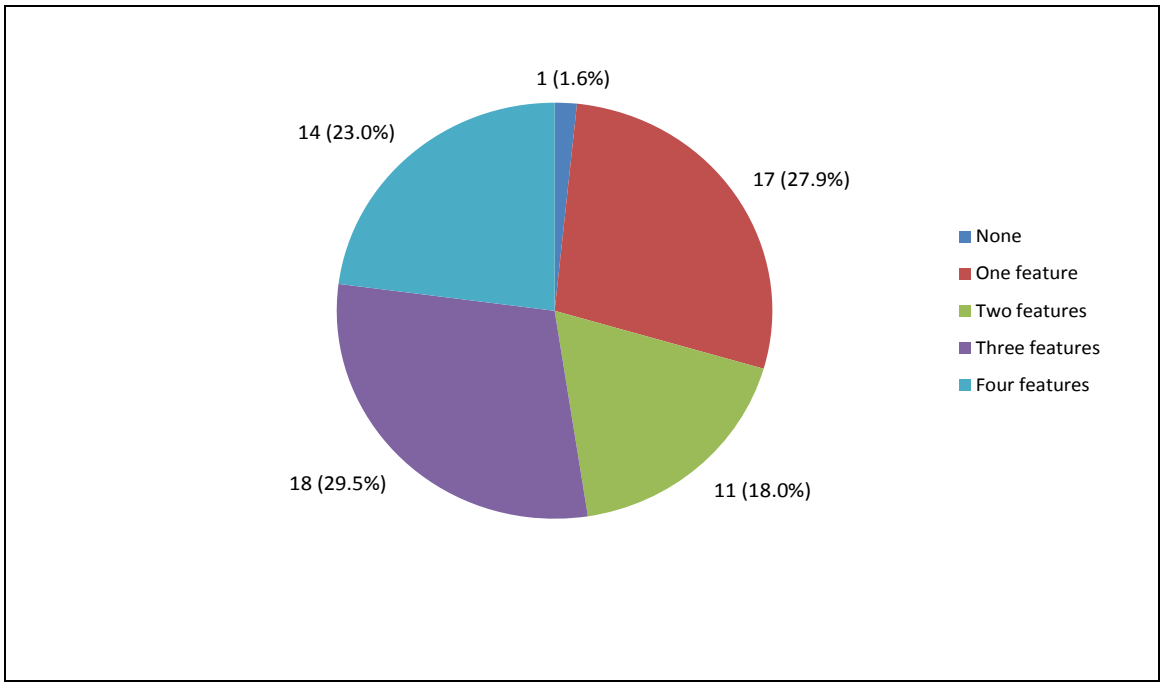
Guideline adherence

Guideline adherence for all patients in this study was evaluated in five specific areas namely identification of third trimester APH, vaginal examination, delivery plans, regular foeto-maternal monitoring, and identification of ruptured uterus. For the mothers in whom a ruptured uterus was diagnosed management of the ruptured uterus was also evaluated. The findings of guideline adherence in each of these areas are presented below.

Identifying 3rd trimester APH

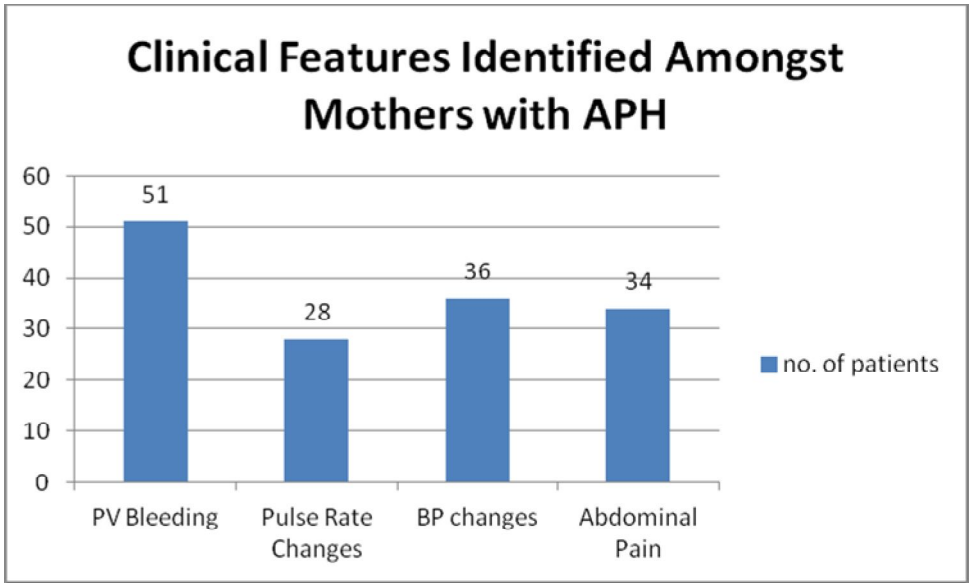
Figure 2 shows that most patients had more than one, of the 4 guideline recommended clinical feature of 3rd trimester APH (PV bleeding, tachycardia, blood pressure and pulse rate changes or abdominal pain) documented. ,17 (27.9%) had one, 11 (18 %) had two, 18 (29.5%) had three, and 14 (23%) had four clinical features of APH documented. (Figure 2).

Figure 2: Number of clinical features related to APH documented in patients' medical notes



Documented evidence of vaginal bleeding was reported in medical records of 51 (83.6%) patients and PV bleeding was the most commonly used clinical feature for identifying APH followed by BP changes (59%), Figure 3.

Figure 3: Features of third trimester APH among pregnant women admitted to Garissa PGH



APH causes

According to the guideline management of APH depends on suspected cause of APH therefore it is important to document suspected causes of APH. Figure 4 shows that the suspected cause of APH was not documented in 10 (16.4%) of the patients presenting with APH. Placenta praevia and placenta abruption were the most commonly documented causes of APH in 27.9% and 26.2% of patients, respectively. Among the 18 patients with other causes of bleeding 5 had heavy show, 9 had ruptured uterus and 1 had cervicitis.

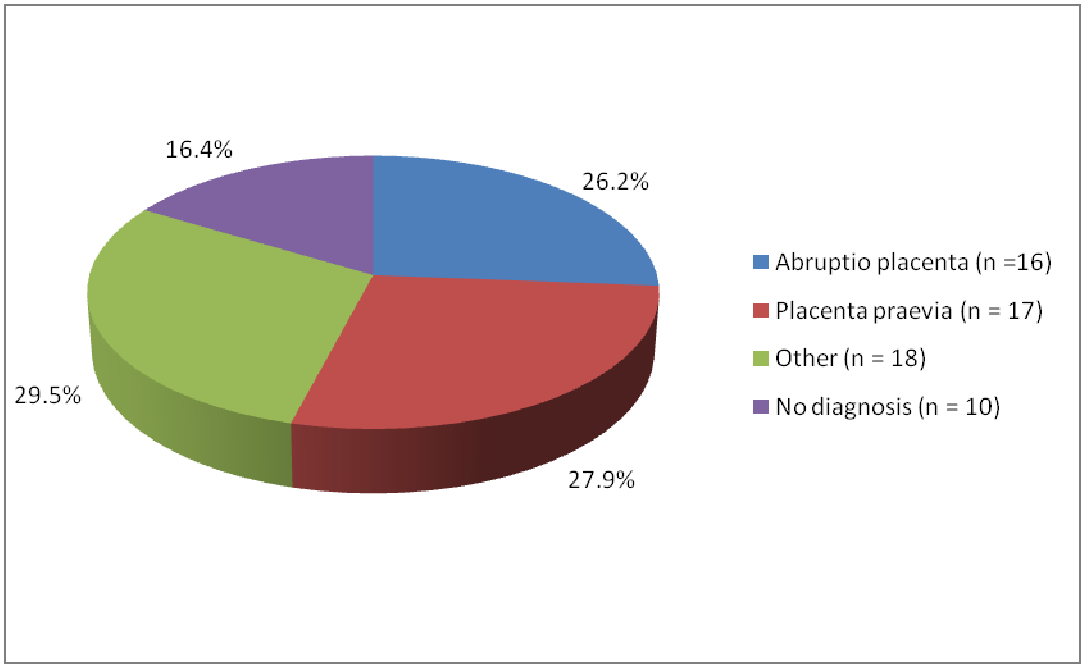


Figure 4: Causes of 3rd trimester APH among patients admitted to Garissa PGH

Vaginal examination

Digital and speculum examinations were frequently conducted on admission for patients presenting with APH with 59 (95.2%) patients undergoing these examination. Out of the 59 patients examined, 32 had a speculum examination performed and 27 had a digital exam (Table 5). No patient had a speculum examination followed by a digital examination, while 2 had no pelvic examination performed. Fifty percent of patients with suspected abruption placenta had speculum examination performed and 13 (76.5%) of placenta praevia underwent speculum examination. Digital examination although contraindicated in these conditions unless done under double set up in theatre or in labor was performed in 50% of suspected abruption placenta and 23.5% of placenta praevia. Seven (43.8%) of the patients with other APH causes had a digital examination done before a speculum examination. Based on guideline recommendations inappropriate pelvic examination was conducted in 19 (31.2%) patients.

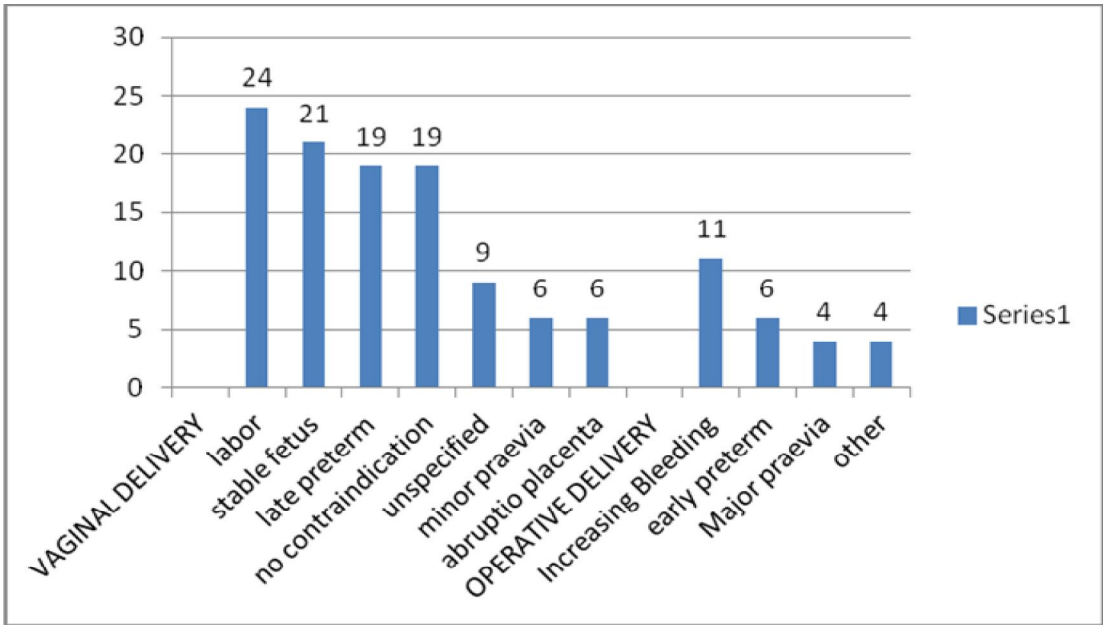
Table 5: Digital and speculum examinations conducted among APH patients at Garissa PGH according to cause of APH

	Pelvic examination		
APH cause	Digital	Speculum	No Pelvic Examination
No identifiable cause	8(80)	2(20)	1
Abruptio placenta	8(50)	8(50)	-
Placenta praevia	4(23.5)	13(76.5)	-
Other	7(43.8)	9(56.3)	1
Total	27	32	2

Delivery plans

There were 55 (90.2%) patients with a delivery plan documented in medical records. The 6 (9.8%) patients without delivery plan were admitted with no indication for immediate delivery although admission diagnosis was 3rd trimester APH. Forty (65.7%) of admission had at least one indication for SVD documented and 15 (24.6%) had an indication for CS delivery. The indications for both SVD and CS delivery are presented in Figure 4.. The most common indication for SVD was established labour (n = 24) followed by stable foetus (n = 21). For CS the most common indication was heavy bleeding (n = 11).

Figure 5: Indications for SVD and CS delivery among APH patients at Garissa PGH



Foeto-maternal Monitoring

Monitoring of all three signs of feto-maternal wellbeing (maternal pulse rate, maternal blood pressure and foetal heart rate) was documented in 32 (52.5%) of patients. Foetal heart rate monitoring was most frequently documented in 51 (83.6%) of patients. Table 6 shows the frequency of maternal BP and pulse rate monitoring.

Table 6: Foeto-maternal monitoring of 3rd trimester APH patients at Garissa PGH

	Frequency	Percent (%)
Foeto-maternal monitoring		
Pulse rate	36	59.0
Blood pressure	42	68.9
Foetal heart rate	51	83.6

Diagnosis and management of ruptured uterus

Based on assessment for guideline recommended signs of uterine rupture, 9 (14.8%) patients had features consistent with ruptured uterus. The management of these nine patients is presented in Table 7. Exploratory Laparatomy was conducted in 6 patients and was the most commonly instituted guideline recommended management for ruptured uterus. Four patients were intubated.

As for management of uterine rupture 5 (66.7%) had guideline recommended management of Explorative Laparatomy.

Table 7 shows that patients with ruptured uterus had poorer outcomes compared to those without rupture (Fisher's exact p = 0.01). One (11.1%) of nine patients with ruptured uterus had a live birth compared to 30 (57.7%) of the patients without ruptured uterus.

Table 7: Diagnosis of uterine rupture and third trimester APH outcome at Garissa PGH

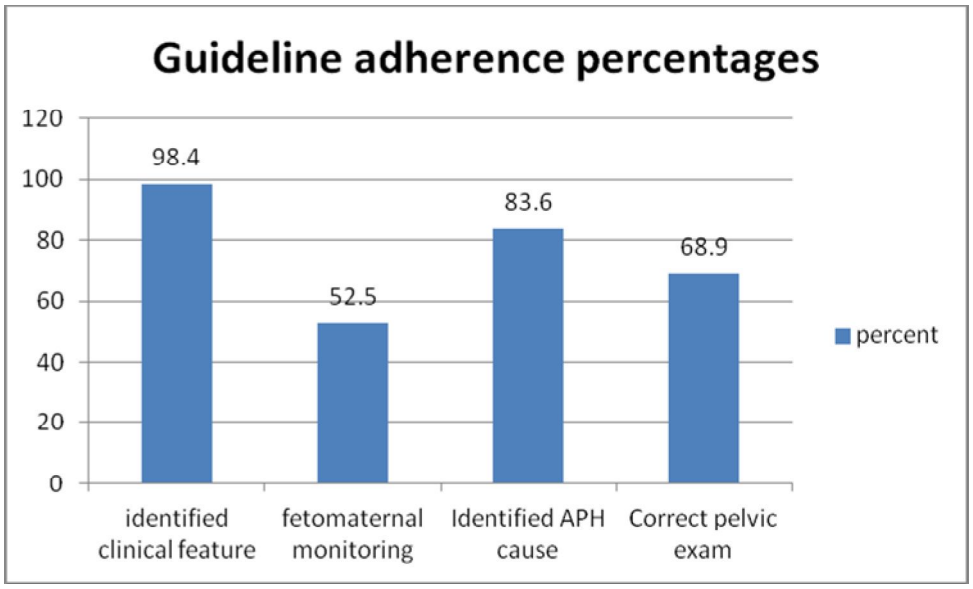
	Outcome		P value
	Live birth	Poor outcome	
Ruptured uterus			
Yes	1 (11.1%)	8 (88.9%)	0.01
No	30 (57.7%)	22 (42.3%)	
	31 (50.8%)	30 (49.2%)	

Composite Guideline adherence

Overall guideline adherence was defined using a composite index obtained by calculating the proportion of patients who had all four guideline recommendations implemented: documentation of any clinical features of APH (PV bleeding, BP changes (hypertension or hypotension), tachycardia and abdominal pain), identifying APH cause, conducting vaginal examination and foeto-maternal monitoring.

Based on the above definition 22 out of the 61 patients were managed according to guideline recommendation giving a complete guideline adherence rate was 36.1%. Adherence rates for the different guideline management components are presented in Table 9. The component with the highest adherence (98.4%) was identifying APH clinical features while the lowest adherence (52.5%) was reported for foeto-maternal monitoring.

Table 9: Third trimester APH guideline adherence at Garissa PGH



Predictors and impact of guideline adherence

There was no significant association between patient characteristics and overall guideline adherence. The average age of patients who were managed according to guidelines was 31.2 years compared to an average age of 30.6 years for patients not managed according to guidelines (t-statistic = -0.22, p = 0.82).

There was a significant association between cause of APH and guideline adherence (Fisher's exact p = 0.015), Table 9. None of the 10 patients without an identified cause of APH was managed according to guidelines. Most 10 (58.8%)of placenta praevia were managed according to guidelines while 31.3% of placenta abruption received guideline recommended care.

Table 9: Comparison of adherence levels with identifiable diagnosis

	Complete adherence		P value
	Yes	No	
Abruptio placenta	5 (31.3%)	11 (68.7%)	
Placenta praevia	10 (58.8%)	7 (41.2%)	0.015
No identifiable cause	0 (0%)	10 (100%)	
Other	7 (38.9%)	11 (61.1%)	

Adherence to clinical guideline recommendation associated with outcome (Pearson's chi = 4.2, p = 0.04). Fifteen (68.2%) of the 22 patients receiving guideline recommended care have live births compared to 41% (n =16) of the 39 patients who did not receive guideline recommended care (Table 10)

Table 10: guideline adherence and third trimester APH outcome at Garissa PGH

	Outcome		P value
	Live birth	Adverse outcome	
Guideline adherence			

Yes	15 (68.2%)	7 (31.8%)	0.04
No	16 (41%)	23 (59%)	
	31 (50.8%)	30 (49.2%)	

Key informant interview

Health worker familiarity with APH guidelines

Twenty health workers were interviewed during the key informant interviews. 18 of these respondents were aware of the existence of standardized clinical guidelines for management of third trimester APH. When asked why they were unaware of the existence of APH guidelines, health workers reported that they had never worked in obstetric units, that there were no regular updates within the hospital on recent advances in obstetrical care and the guidelines were not locally available. Health workers felt that guideline awareness could be raised by improving availability of guidelines and conducting trainings on the guidelines through Continuous Medical Education (CME).

APH guideline utility

Most (n = 17) health workers thought that the APH guidelines were useful. When they were requested to outline the specific areas of guideline usefulness respondents indicated that guidelines helped in direct patient management, improved pregnancy outcomes (reduced mortality) and helped to standardize the care provided at the hospital. Three main strategies

were proposed to improve the usefulness of the guidelines: increasing guideline availability, training health workers and patients on guideline recommendations and availing resources and equipment required to provide guideline recommended care. Approximately one-half of interviewed health workers had received training on the APH guidelines and all these trained staff felt that guideline training had improved their clinical skills and preparedness for managing APH patients.

Obstacles in guideline utilization

The requirement of multidisciplinary participation in APH guideline implementation was identified as a significant barrier to effective guideline utilization. Firstly, health workers stated that delays in delivery of laboratory results hampered the decisions concerning patient management. These delays were significantly long in some cases and this was noted to be a particular concern for APH because it is an emergency condition requiring prompt decision making. Separately, health workers felt that uncooperative patients presented a major obstacle to guideline utilization. In particular, two levels of patient failure to cooperate were identified and both were thought to impact on care. These were represented on one hand by mothers who withheld information and made guideline utilization difficult and those who declined to cooperate during treatment. This was defined as a patient making informed decision not to continue with prescribed management proctocol as outlined in clinical guideline.

Other commonly reported obstacle to guideline utilization operated at the institutional level and at the level of individual health workers. During the interviews respondents commonly

cited the failure of the hospital to provide adequate equipment and resources required for providing guideline recommended care. There were also reports at the clinician level of lack of clarity on some guideline recommendation describing these recommendations as ‘not understandable’ for clinicians who had seen the guidelines.

CHAPTER 5

DISCUSSION

The objective of this study was to describe the pattern of guideline adherence amongst HCW in managing 3rd trimester APH and relate this to pregnancy outcomes, awareness and perception of HCW to the stated MOH guidelines. In addition, a description of the unique barriers to uptake of the mentioned guidelines was done.

Generally, most HCW knew about the recommended guidelines and perceived them as being useful in patient management. Moreover, most had received training on the same. Despite this high level of knowledge and positive attitude, adherence levels were low from review of records. This could reflect lack of documentation or maybe a demonstration of a gap between knowledge, attitude and clinician behavior in implementing proven clinical practice.

Some of the obstacles cited by the HCW which are in keeping to those outlined by the McDonnell norms group (JAMA, 2009) that included external barriers such as inability to reconcile patients' preference with guideline recommended practice and environmental factors such as lack of resource and time delays. Cabana in 1999 described what has been widely accepted as Cabana categorization of guideline implementation failures. These ranged from institutional failures such as laboratory/radiology delays; failure to reconcile patients' preference to guideline recommended practice such as delays in getting patient consent to treatment and poor disclosure of clinical history (Cabana et al, 2009). Others studies specifically McDonnell Norms Group added an eighth barrier to those of Cabana as failure to make guideline based advice available at point of care, rather than relying on the ability of clinician to read, remember and properly apply these guidelines (JAMA, 2009).

This is in consistency with Irimu, 2012 findings that uptake of clinical guidelines, particularly for tasks that rely on competence of individual clinician have significant impact on outcome (PLOS Medicine, 2012).

Although previous studies have found maternal age above 35 as a risk factor for APH we did not find this. This could reflect the lower age of women delivering in the hospital.

In terms of clinical diagnosis we found almost equal proportions of placenta previa and abruption placenta. However the frequency of ruptured uterus was high. This could be due to late presentation of patients.

In relation to disease burden, maternal mortality in this study translates to 213,114/million maternal mortality which is remarkably high compared to 2006-08 UK confidential inquiry report into maternal mortality that had 9 APH related deaths of 3.9/ million maternal deaths reported.

CHAPTER 6

CONCLUSION

Despite HCW at Garissa PGH maternity ward being aware and perceiving APH guidelines as a useful tool, adherence level to the same guidelines is quite low, and this directly reflects on the high poor outcomes documented.The practice gap could be attributed to obstacles sited by the HCW.

RECOMMENDATIONS

In view of the study findings, there is need for regular scheduled evaluation of guideline adherence with identification of unique barriers to uptake, and eradicating these obstacles for continued quality maternal and neonatal healthcare.

Moreover, more studies assessing specific barriers to physician uptake of APH guidelines need to be performed to form a basis for producing practical tailor made guidelines for special set ups such as Garissa PGH.

APH champions could be identified amongst the HCW who will continually advocate for good practice in management and also serve as readily accessible reference in difficult cases.

Random scheduled ongoing reviews of patient records with admission diagnosis of APH and appraising HCW on implemented care to keep at per with guidelines.

Also, feedback to guideline developers to tailor make and simplify the steps in guideline implementation is advised.

Lastly, use friendly guidelines such as charts and diagrams pinned on walls of maternity ward as opposed to a booklet in an office or use of APH algorithm to constantly serve as a reminder.

LIMITATION OF STUDY

1. The patients records found were 61 out of the intended 100.This could potentially bias the results as it's difficult to know the adherence level and outcomes of the uninterogated records. In interpreting data, missing records was taken as the best case scenario when doing analysis.

2. HCW studied might not have directly handled the patients who were admitted with APH during the study period spanned from 2007 to 2012.There was no attempt to demonstrate what proportion of patients was managed by health care workers who were studied, which is an important issue to address in future.

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APPENDIX 1

(i) INFORMED CONSENT

This informed consent form is for health care providers at Garissa Provincial General Hospital and I am inviting you to participate in MEPI, titled "Description of opportunities and barriers in practice of evidence based medicine in management of ante partum hemorrhage".

I am Dr Rosa Chemwey Ndiema, a resident student at the University of Nairobi. I am doing research on the "Opportunities and barriers in practice of evidence based medicine in management of ante partum hemorrhage (APH)".

I am going to give you information and invite you to be part of this research. You do not have to decide today whether or not you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the research.
This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask them of me or of another researcher.

APH is one of the leading causes of maternal death in your institution and we believe this research will help bring out the strengths and weaknesses encountered in managing patients with this condition, and subsequently come up with practical solutions to the same.

You are being invited to take part in this research because we feel that your experience as a health care provider can contribute much to our understanding and knowledge of local health practices. There will be no direct benefit to you, but your participation is likely to help us find out more about how to improve care to our mothers with APH

Any information obtained from you shall be treated with utmost confidentiality. The results of the research will be published in order that it may help in management of patients.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have asked has been answered to my satisfaction. I consent voluntarily to be a participant in this study

Print Name of Participant_____

Signature of Participant _____

Date _____

Day/month/year

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands.

A copy of this ICF has been provided to the participant.

Print Name of Researcher/person taking the consent_____

Signature of Researcher /person taking the consent_____

Date _____

Day/month/year

APPENDIX 2

DATA EXTRACTION SHEET ON ASSESSMENT OF GUIDELINE ADHERENCE IN MANAGING 3RD TRIMESTER APH.

Admission number---------- Admission Date----------

Age---------- Parity__----------

Time of admission----------(in 24hour clock)

Study Number----------

1. Which feature of 3rd Trimester APH identified? (Tick appropriately)

a. Genital bleeding Yes No

b. Pulse Rate Yes No

c. Blood Pressure Yes No

d. Abdominal Pain Yes No

e. Others Yes No Specify----------

2. Which cause identified?

a. Abruptio Placenta Yes No

b. Placenta Praevia Yes No

c. Others Yes No specify----------

3. What vaginal examination performed (tick where applicable)

a. Speculum ☐
b. Digital ☐
c. Others ☐ Specify----------

4. Indications for vaginal delivery in 3rd trimester APH identified (Tick Appropriately)

a. Minor Placenta Praevia ☐
b. Gestation>36 ☐
☐

c. No obstetric contraindication

d. Already in labor ☐

e. Stable fetus ☐

f. Abruption Placenta ☐

g. Not specified ☐

5. Caesarean delivery indicated (tick appropriately)

a. Increasing bleeding ☐

b. Gestation>34 weeks ☐

c. Major praevia ☐

d. Others(Specify)---------- ☐

6. Regular Feto- maternal monitoring done ☐

a. Maternal pulse rate

b. Maternal blood pressure ☐

c. Foetal heart rate ☐

d. Not specified ☐

7. Maternal signs/symptoms of ruptured uterus identified?

a. Rapid Pulse rate ☐

b. Low BP ☐

c. Reduced Glasgow Coma Scale ☐

d. Abdominal pain/tenderness ☐

e. Easily palpable foetal parts ☐
f. PV bleeding ☐
g. Others (Specify).....

8. Management of ruptured uterus outlined (tick appropriately)

a. Patent airway ☐
b. Patient breathing/ intubated ☐
c. BP/PR restored ☐
d. Blood Samples drawn ☐
e. Exploratory laparatomy done ☐
f. Not Specified ☐

9. Pregnancy Outcomes in each case identified at the end of patient management.

a. Live birth ☐
b. Stillbirth ☐
c. Maternal Death ☐
d. Anaemia ☐
e. Others (specify).....

APPENDIX 3

KEY INFORMANT INTERVIEW GUIDE ON MANAGEMENT OF 3RD TRIMESTER APH

1. What is your feeling regarding awareness of APH guidelines among HCW?

Prompts:

- Which ones are you aware of?
- Why are you not aware of them?
- How can awareness be improved
- Have you seen any of these guidelines?
- Are there any challenges you face in regards to this guidelines?

……
……

2. What is your perception of these APH guidelines?

Prompts:

- Are they useful?
- If yes how if no why not?
- How can usefulness be improved?

……
……

4. What is the role of training in regards to utilization of APH guidelines?

Prompts:

- Have you been trained?
- If yes how useful has the training been?

…….

……..

3. Other comments?

……..

THANK YOU FOR PARTICIPATING

CLINICAL MANAGEMENT GUIDELINE FOR ANTEPARTUM HAEMORRAGE BY MINISTRY MEDICAL SERVICES

Page 457 sections 58.3 outlines the following as the national guidelines for ante partum hemorrhage management in level 4 to 6 hospital:

Antepartum hemorrhage (APH) is defined as vaginal bleeding after the 20th week of pregnancy. APH is associated with increased feto-maternal morbidity and mortality. The fetal and maternal status will depend upon amount, duration and cause of bleeding. The causes of APH are:

- Extraplacental bleeding from sites other than the placental surface, including cervical lesions such as trauma, tumour, polys and vaginal lesions such as lacerations and vulvoperineal lesions such as warts and tears.
- Placental Causes
    - Placenta Abruptio: defined as when a normally implanted placenta detaches from uterine wall after the 20th week and prior to 3rd stage of labor. Bleeding may be absent,mild moderate or severe.
    - Placenta praevia: this occurs when placenta implants anywhere in the lower uterine segment. Further clinical classification depending on the relationship to internal cervical os:
        - Minor degree
            - Type 1- placenta on lower segment ut not encroaching the os
            - Type 2-Placenta partially encroaches the internal os but vaginal delivery possible
        - Major degree
            - Type 3- Placenta partially encroaches the internal os and remains the same during labor
            - Type 4- Placenta totally covers the internal os and does not change during labor

- Vasa Praevia: rare cause APH where umbilical cord inserts into placental membranes with blood vessels traversing and presenting over the internal os.

Investigations

Hemoglobin

Urinalysis for hematuria and proteinuria

Bedside clotting time

Bleeding time

Platelet count

Others: Ultrasound that offers a high degree of accuracy in APH

Management – General

Always admit a patient with APH even if she appears apparently stable.

- Take a careful history and note
    - Amount and character
    - Any associated pain
    - History of Bleeding earlier in pregnancy
    - History of trauma
- Do a thorough physical exam including abdominal examination
    - Tenderness and guarding
    - Contractions
    - Presence of fetal heart rate
- Carry out speculum examination
    - Bleeding from uterus
    - Other sites bleeding
    - Assess cervical dilatation
- In patients with APH

- Quickly evaluate Feto-maternal status
- Take blood for grouping and cross match
- Start IV 5% dextrose or Normal saline in a large bore branular
- Monitor vital signs(BP, PR, Temperature and respiratory rate) and insert an indwelling catheter

- For patients in Shock
  - Ensure open airway and breathing
  - Establish and maintain adequate circulation
  - Monitor Input/ Output
- Specific management depends generally on
  - Gestational Maturity
  - Condition of fetus
  - Continued bleeding or not
  - Onset of labor
- Essentials of Diagnosis
  - Abruptio Placenta
    - Continuous abdominal pain/back pain
    - Irritable, tender often hypertonic uterus
    - Board like rigidity
    - Visible or concealed hemorrhage
    - Evidence of fetal distress
  - Rupture of uterus may be confused with abruption placenta. The following features are salient to ruptured uterus
    - Efforts of resuscitation mother unsatisfactory (BP remain low, pulse rapid and thread)

        - Uterine contractions absent
        - Difficulties in establishing shape and orientation of uterus due to peritoneal irritation and empty uterus.**This is a very important sign**
        - For mothers who have been in labor, cessation of fetal sounds, labor and recession of presenting part
    - Once ruptured uterus has been ruled out then management for abruption placenta is commenced.

Principles of treatment

- Rapid correction of hypovolemia as outlined above
- Correction of Coagulation Defect- Whole blood, FFPs
- Early uterine emptying
- Vaginal delivery where possible
- Prevention of PPH
- Thorough physical examination and speculum examination.
- If above measures do not establish a diagnosis then do EUA in theatre rule out Placenta praevia then do amniotomy and start oxytocin if no contraindications.
- Indications for abdominal delivery
    - Intra uterine fetal demise with severe bleeding
    - Severe degree of abruption placenta with a viable fetus
    - Hemorrage severe enough that jeopardizes maternal life
    - Any incidental complications of labor
- Postpartum continue oxytocin for 2 hours

Placenta Praevia

The management of placenta praevia depends on gestation, extent of bleeding and clinical findings. Conservative management is done when: Bleeding is minimal and a significant risk of prematurity exists. The decision follows complete evaluation and physical examination of fetal and maternal status. Speculum examination is mandatory. The following must be done:

- Hospitalization is mandatory in a place with ceasarian section facility
- Restriction of physical activity
- Weekly hemoglobin
- Avoid unnecessary physical examination
- Ultrasound monitor if possible

Patient may bedischarged and re-admited at 38weeks if placenta normally situated otherwise:

- If bleeding does not recur after 37weeks then prepare for theatre in a double setup for EUA and caesarian section (CS).
- If a minor degree of placenta praevia found then do amniotomy, institute oxytocin and DELIVER vaginally if no contraindication
- If major degree found, then prepare for ceasarian section
- Do a CS if bleeding is severe to compromise life, if in doubt about degree of praevia or if there is any other contraindication to vaginal delivery.