

Maternal mortality in Uasin Gishu District, Kenya: An exploration of coverage and use of maternal health care services.

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Maternal mortality in Uasin Gishu District, Kenya: An exploration of coverage and use of maternal health care services.

A thesis submitted in partial fulfillment of the requirement for the degree of Master of Public Health

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Declaration:

Where other people's work has been used (either from a printed source, internet or any other source) this has been carefully acknowledged and referenced in accordance with departmental requirements.

The thesis: Maternal mortality in Uasin/Gishu district, Kenya: An exploration of coverage and use of maternal health care services is my own work.

Signature:

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Dedication

*To My Best Teachers Job and Katinka van de Pas
And My Baby Son Keith*

Abstract:

Background: Kenya has a high maternal mortality ration of 414/100000. The maternal health services coverage and use is low. This may be due to health service factors as well as poor socioeconomic, cultural poor accessibility or poor quality of services.

Objectives: to examine the factors influencing maternal health services in Uasin/Gishu district and identify possible interventions that can reduce maternal mortality. To make recommendations based on the findings.

Methodology: The literature review was done using the three delay model to analyze the sociocultural factors and the Tanahashi/Knippenberg to analyze the service factors. In addition data from the district and regional office and my own experience was used.

Findings: Early marriage followed by many births, is a factor that leads to poor educational attainment for women and perpetually keeps them dependent on the spouse. This dependency makes women unable to make decisions even when their own lives are in danger. Other factors are the lack of physical and economical accessibility of services. And the last factors are adequate facilities but poor or lack of quality in our health facilities.

Conclusion: Cultural, physical accessibility, economic and poor quality of services are all factors contributing to mothers not using maternal health care services in Uasin Gishu district.

Recommendations:

- We need to address the culture of early marriages by creating community awareness campaigns on the dangers and consequences of early marriages;
- Need to create conditions for education of the girl-child;
- Need to introduce community based initiatives to tackle the problem of accessibility both geographical and financial especially during emergency obstetric complications;
- We need to improve on the quality of services including post abortal care.

Chapter 1: Introduction:

I work at Moi Teaching and Referral Hospital caters as a referral hospital for the north rift region of Rift Valley Province in Kenya. This is a tertiary hospital where high risk pregnant women are referred. These may be within the catchment area of the hospital or referred from the health centers and neighboring district hospitals. Among referral cases the majority of maternal deaths are due to obstructed labor, eclampsia and sepsis and in rare cases anesthetic complications (own observation). Either these cases have been delayed at home or on the way to the hospital or on reaching a district hospital. For one reason or other they could not be managed and had to be transferred to a tertiary hospital and finally experienced delay in receiving care within the health facility.

The government of Kenya aims to improve the situation regarding the MDG 5 i.e. maternal mortality by three quarters by 2012. The targets are to reduce maternal mortality from the current level of 414 to 147/100000¹.

There is lack of reliable data from the provincial offices but overall there has been a reduction in the estimates for maternal mortality ratio in the country from the last two surveys. In 1998 (for the period 1988-1998) the ratio was 590 and for 2003 it was 414 (this was for the period 1993 to 2003). Forty percent of women in Kenya deliver in a health facility and in rift valley this is estimated at 35.9%. The large majority of women deliver without skilled attendance².

The purpose of this paper is to study the factors associated with maternal mortality in general and Uasin Gishu district in particular.

CHAPTER 2: BACKGROUND INFORMATION

2.1 General information on Kenya

2.1.1 Geography:

Kenya is located in East Africa. Its neighbors are Uganda to the west, Tanzania to the south and Ethiopia and Sudan to the north. Somalia and the Indian Ocean are located to the east. The country is divided into 8 provinces which are further divided into districts and locations. There are more than 42 tribes in Kenya with different cultural beliefs and behaviors. The capital city is Nairobi. Uasin Gishu district is in Rift Valley province more on the North-Western part of Kenya.

2.1.2 Population and demographic characteristics

The population of Kenya was estimated at 37.2million in 2007. The ratio of men to women is 49 to 51%. The mean size of a Kenyan household is 4.4 persons. Twenty three percent of females and 16% of males have no education at all. In rift valley 17.4% reported not having attended any school at all. More rural residents are illiterate than the urban dwellers².

The national health survey also explored people's access to information. It was found that women were less likely than men to have access to mass media (radio, TV newspapers). Only 13% of women and 27% of men are exposed to all three of these media sources.

The TFR for Kenya was 5.0 children with the rural rate higher at 5.5 compared to urban 3.2. The rift valley and north eastern provinces had the highest rates at 5.8 and 7.2 respectively².

Forty nine percent of working women and 42% of working men are engaged in agricultural activities. Only 7% of women work in professional technical and managerial fields. Although 40% of married women make decisions on their own health care by themselves, 43% say their husbands make such decisions alone. About 4/10 women who are employed for cash participate in making all decisions compared to 12% unemployed women².

2.1.3 Socio economic situation

The economy has had sluggish growth since 2002 and currently the GDP is estimated at 7% from 6.4 in 2006. This poor economic growth is reflected in increasing poverty, unemployment and loss of jobs.

Agriculture as a source of GDP declined from 17.4% in 2006 to 8.1% in 2007.

This poor economic situation is evident in the livelihoods of Kenyans. All this is seen in the poor access to basic amenities like water and sanitation, housing, energy that is seen in communities.

Collecting firewood and water and sometimes even building houses in the rural areas is mainly the work of women. This has influenced enrolment and continuation of girls in schools and their health seeking due to the many opportunity costs⁴.

2.1.4 Policies and strategies of MOH reproductive health care in Kenya

The ministry of health adopted a decentralized approach where funds are allocated to the districts. The management of the district health care is under the District Medical Officer of Health (DMOH). He receives support from the District Health Management Board (DHMB) and the District Health Management Team (DHMT).

There has been an increase in budgetary allocation from 7% in the 2003/4 year to 7.9% in 2006/7. This is still less than the 15% that was agreed on at the Abuja declaration.

During the 2006/7 year district health services had the highest allocation and expenditures. Rural health services followed by provincial hospitals received a larger share of the resources. The combined resources for the rural district and provincial allocations were 53.7% of the expenditures.

The per capita spending in 2006/7 was US\$10 which was less than the WHO requirement of US\$34¹.

Other challenges that have that have emerged are:-

- Health facilities construction through constituency development fund meant to address the need for people to have access to services but mainly for political reasons. These facilities face the problem of staffing and supplies.
- There is the problem of human resources and mal-distribution of the available personnel. The ministry has tried to counter this by hiring staff on contract especially in hardship areas.
- The ministry also plans to strengthen the health information system which despite previous investments does not provide timely and comprehensive data. As the system is decentralized there is a need for health information that will be useful for monitoring and evaluation of the health situation and also provide health workers and communities with useful information on the health situation within districts.
- In order to improve on medical supplies the ministry of health plans to enhance procurement system to avoid the delays and refurbish and strengthen all regional supply depots¹.

2.1.5 Structure of the Health system particularly the reproductive health care system:

The health system in Kenya is based on 3 types of health facilities: hospitals, health centres and health sub-centres. The sub-centres are divided into dispensaries and mobile clinics. National referral hospitals form the top tier of the pyramid the provincial and district and sub-district hospitals form the middle and the health centres and dispensaries form the base. In 1970 the gate keeping mechanism of was established where the health centres and dispensaries were the first contact facilities for people seeking health care. The main provider of health services is the ministry of health (MOH) the rest is provided by religious organizations 18% and private NGOs providing 25%⁴. The range of services that should be provided at the various levels of care is as follows:

Level I – community: at this level the activities are mainly preventive and promotive e.g. FP, STDs, cancer of reproductive organs. The individuals and community should be able to recognize conditions that need referral to the primary level facility.

Level II – dispensary: this level takes care of preventive curative and promotive services. They should also be able to keep records of births and deaths. Deliveries are conducted at this level only when it is imminent (in 2nd stage).

The services at this level include counseling on various RH issues antenatal and postnatal care, FP, syndromic diagnosis and treatment of common STIs and identification of symptoms and obvious signs of cervical and breast cancer.

Enrolled nurses and public health technicians run these facilities. Enrolled nurse/midwives have 2 years training.

Level III – health centre: this level provides support for all the level 2 activities. Deliveries are conducted as long as they are without complications anticipated. Limited simple laboratory facilities for screening and diagnosis of STIs and cervical cancer are available. This level is able to provide basic first aid for obstetric complications but is not equipped for surgery or managing delivery complications like obstructed labor. Minor surgery on outpatient basis can also be done. Kenya registered nurses/midwives and clinical officers run health centre. These are nurses with 3years training. They are also able to teach and play administrative and supervisory role within the facility. Clinical officers are mid level cadres who are clinical assistants. Infertility cases are also be identified and referred.

Level IV – district hospital: This level supports all the level 3 functions. Apart from this there are 24 hour specialized obstetric/gynecological

care (Basic and emergency obstetric services. There are also services for management of incomplete abortion and complications various services targeted at the youth.

Provision of all contraceptive methods is possible at this level. The laboratory test are more specialized eg for infertility.

Level V – VI – referral hospital:

This level supports all the level 4 functions above. Apart from that they have specialized clinics for diagnosis and management of complication of pregnancy, infertility, cancers of the reproductive organs, specialized laboratory facilities including hormonal assays, clinical chemistry and immunology and have full package of reproductive health services including all the contraceptive methods in the country. There is also training for different cadres of health professionals, research/testing and introduction of newer technologies⁵.

The numbers of health workers in public service has been increasing but it is not on record how many leave the workforce every year⁶.

Nationally only 11.3% of Kenyans travel one kilometer or less to reach a health facility while about 47.7% travel for 5 kilometers or more. More than 50% of the rural dwellers travel for more than 5 kilometers to reach a health facility. 31.4% of rift valley dwellers travel for one kilometer to reach a health facility and 40.7% travel for more than 5 kilometers⁷.

2.2 Background of Uasin/Gishu district

2.2.1 Geography

Uasin/Gishu is a highland plateau 2700m above sea level at Timboroa. The district is in the catchments area of Lake Victoria in Nyanza province. All the rivers draining into Lake Victoria originate or pass through this district. The rainfall in the district is generally high and evenly distributed. The district has 90% arable land with more than 2/3 of it being high potential and 1/3 being medium potential. The predominant tribe is Kalenjin and the main religion is Christian (99.5%). Within the towns other tribes which have migrated into the district are found. The people are mainly farmers, herders, laborers or unskilled workers⁸.

The ratio of men to women in UG was 50.5 to 49.5%. 51.6% of women are married and at age 24 only 38% were single. A large population at this age is married. More females 59.6% than males 40.5% did not attend school. Enrolment for all levels of schooling was lower for girls than for boys. At the university level for every 47% if girls enrolled there were 53% boys. At the starting of schooling both girls and boys had equal access but in later stages the proportion of

girl's decreases⁹. Forty eight percent of Kalenjin women are circumcised² this happens when they reach teen age.

The district has well developed road network. Many are earth roads and become impassable during the rainy seasons. Eighty four percent of the people travel more than 5km to reach an asphalt road.

2.2.2 Political/administrative setup

Uasin Gishu is the largest of the 19 districts and the most rural populated districts in the rift valley province. The district is divided into six divisions, 51 locations and ninety six sub-locations. There are three constituencies (Eldoret East, Eldoret, North and Eldoret South) and three local authorities (Wareng Country Council, Eldoret Municipality and Burnt Forest Town Council)¹⁰.

2.2.3 Health care delivery system

There is one referral hospital in the district which is within Eldoret town. There are 23 health centres and 81 dispensaries, one FBO and 5 private hospitals. Each division has one or two health centres and several dispensaries. There are 26 centres that are classified as Basic Emergency Obstetric Care (BEmOC) facilities and 6 as Comprehensive Emergency Obstetric Care (CEmOC) in the district^{10,11}.

Table 1 District health profile

DISTRICT HEALTH PROFILE	INDICATORS
1. district population projected in 2007	777,337
2. district population projected in 2008	794,328
3. district population as per 1999 census	622,705
4. women of reproductive age	190,639
5. expected deliveries	39,716
7. crude birth rate	51.1/1000
8. crude death rate	77/1000
9. under fives	127,092
10. population growth rate	3.35
11. infant mortality	54/1000
12. fertility rate	7

District Health Plan - Uasin/Gishu District 2008/9

CHAPTER 3: PROBLEM STATEMENT:

Death during pregnancy and delivery is a problem in the developing countries. In Kenya, maternal mortality ratio is estimated to be 414 per 100,000 live births. Compared to other developed and developing countries this is high. The government committed to reduce maternal mortality to 147 by 2012. From the last survey in 1998 there has been a 30% decline from 590 in 1998. Contraceptive prevalence rate is still 39% with a high unmet need for family planning. The fertility rate has risen from 4.7 in 1998 to the current five².

While regional or district figures for maternal mortality are not available the records from the district health office show that maternal mortality at the health centre level has been fluctuating around 250 per 100,000. Information from the five hospitals in the district is not available. The hospital records of the referral hospital show a MMR of 900¹. It is expected that this figure is on the higher side, since this is a referral hospital. From the above one can estimate that the MMR for the district as a whole is somewhere between 250 and 900, and is still very high. There has been little improvement in maternal mortality in the last few years. This is a matter of grave concern and it is important to mind out the reasons for this high maternal mortality.

Another cause of maternal mortality whose figures are usually not accurate is mortality caused by abortion complications. The probability is that the figures are much higher than quoted and this is because of fear and stigma associated with unsafe abortions. About 13% of all maternal deaths worldwide are attributed to unsafe abortions. This makes unplanned and unwanted pregnancies a serious public health problem. In Kenya it is estimated that 30-50% of maternal deaths are due to abortion complications, in Uasin Gishu, in 2007, of the 250 maternal deaths (per 100,000), 184 were due to abortion related complications.¹⁰ In a study done involving the referral hospital in Uasin Gishu, the number of women with abortion related complications admitted to public hospitals was about 20,000 annually. The annual incidence of these complications/1000 women aged 15-49 is 3.03 and the projected abortions per 1000 live births is 19.2. Adolescents account for 16% of those admitted with incomplete abortion and the case fatality rate was 0.87%².

This review thus focuses on finding the causes of continued high maternal mortality in uasin gishu district. This is my main area of

¹ Personal communication with head of RH division Dr Chirchir.

² See reference 21

interest having worked in this area without seeing any significant change in maternal mortality in the past 10 years.

3.1 Study question:

What are the factors influencing maternal mortality in Uasin Gishu district?

3.2 General objectives:

To examine factors influencing maternal health services in Uasin/Gishu district and identify possible interventions that can reduce maternal mortality in the district as a whole.

3.3 Specific objectives:

1. To review factors influencing access and utilization of the health care services.
2. To examine coverage of maternal health care services
3. To review the evidence for strategies/interventions that has worked elsewhere and their applicability to Uasin/Gishu district.
4. To use the findings to make recommendations to the district and provincial managers for reduction of maternal mortality in the province

3.4 Methodology:

The methodology will be literature review of publications and secondary data on maternal health from the Ministry of Health, Ministry of Finance & Economic Planning, Kenya and other organizations like WHO, UNDP or World Bank reports. International literature will also be used. The search will be both libraries, internet based including use of grey literature from unpublished reports.

Search strategy

Pub med, Google, Science Direct, Cochrane, WHO Reproductive health library, UNPFA, UNICEF, World Bank reports, UNDP, KIT & VU libraries were accessed to search for literature.

Key Words:

Maternal mortality, Kenya, Uganda, Tanzania, sub-Saharan Africa, health indicators, socio-cultural, socioeconomic , Rift Valley Province, WHO, 'MDGs Kenya', Essential obstetric care, Basic and Comprehensive EmOC, Women's status, access/utilization of health services, quality of services, demand/supply of h/services,

Word count: 11,675

3.6 For whom:

This paper will be of value to the administrative and planning unit of Uasin gishu district. This paper will help better understand the key causes of continuing high maternal mortality. The recommendation from this paper will help the District health management team to focus clearly on the key problems and bottlenecks and will offer evidence based problems and bottlenecks and will offer evidence based recommendations to address these.

3.7 Limitations:

- No fieldwork will be conducted which could have provided primary data from the health centres and the private providers on maternal mortality in the district.
- The data to be used will be from records which may be incomplete old and outdated.

CHAPTER 4 CONCEPTUAL FRAMEWORK

In order to analyze the factors influencing maternal mortality the 3-delay model and the Tanahashi/Knippenberg models would be adapted. With the 3-delay model I will be able to examine the sociocultural and perception aspects of service demand factors that can lead to delays in utilizing health services during obstetric emergencies^{12,13,14}.

To better understand the reasons for the 3rd delay I will use the Tanahashi/Knippenberg model to look deeper into the maternal services coverage for all pregnant women, those who have delivered (postpartum) and those in labor (intrapartum) and also the factors that have lead to the low utilization of EmOC services. The Tanahashi/Knippenberg model analyses the interaction between the services provided and the people who should benefit from it. The relationship depends on availability of resources, distribution of facilities the people's attitudes towards health care. All these factors are examined as a proportion of the target population and this gives the coverage of the services^{13,14}.

In order to study coverage five coverage measure were proposed and these were availability, accessibility, acceptability, adequate and effective coverage. The indicators used are shown in annex 1.



Diagram 1: Coverage pyramid

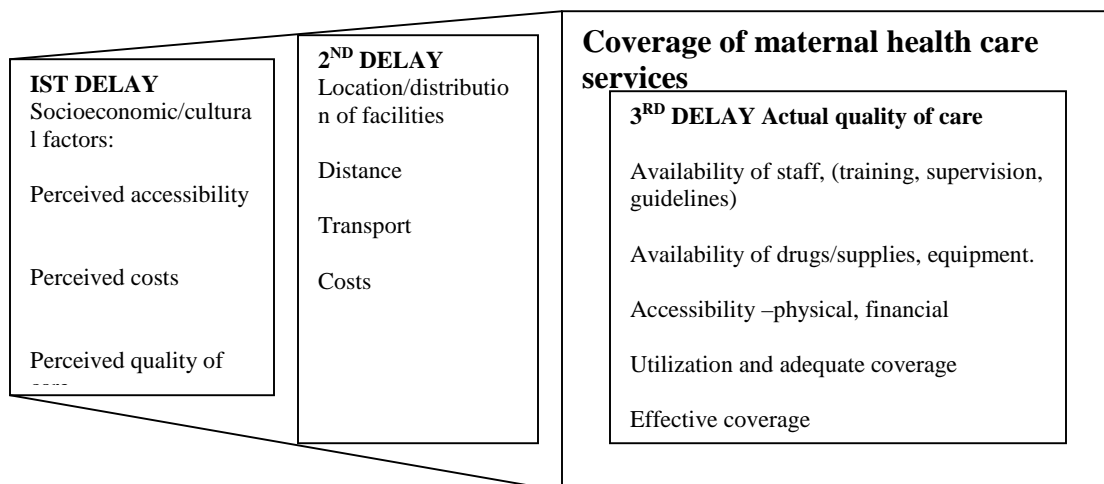
These measurements have differences between adjacent coverage measurements. The rectangle base represents the population that needs the services. As the service provision analysis progresses from availability to effective coverage the rectangle becomes more triangular as more people in need are left out. The unshaded area represents the population in need who have been left out due to insufficient resources, poor access to services, cultural unacceptability

or insufficient knowledge/motivation to contact the health provider. If a large difference is found it implies that for a certain proportion of the target population the service provision is failing. In other words there a problem or some bottlenecks.

A bottleneck at the level of availability, acceptability curve implies poor allocation/deployment of resources. A bottleneck at acceptability and contact means lack of appreciation of service by the public, lack of demand or faulty way of providing the service. A bottleneck at effectiveness means poor quality of service. A bottleneck shows where the problem with service provision is though it doesn't show the specific factor causing them. Once the constraining factor(s) has been known then it becomes possible to take remedial action^{13,14}.

To understand factors affecting access to maternal health care the 3-delay model advanced by Maine in 1994¹⁶ identified three levels which affect access to effective intervention to prevent maternal death by focusing on the delays at community or household¹². It will be possible to analyze the supply factors (availability, accessibility and effective coverage) and demand side factors (utilization and adequate coverage) by combining the two conceptual models. See the figure below:

Diagram 2: Adaptation of the 3-delay model and the Knippenberg



CHAPTER 5: LITERATURE REVIEW AND FINDINGS

5.1 Factors determining the first delay

Early marriages

Cultural norms play a key role in making women vulnerable to pregnancy related mortality. Early marriage and subsequent early childbearing has been recognized as a major factor for maternal mortality. Early marriage is common Uasin Gishu amongst the kalenjin in Uasin Gishu. Not only are the girls married off early they are expected to have children early too. Early marriage and pregnancy before the girls body has matured increased the risk of maternal mortality.

Female genital cutting

In addition the kalenjins circumcise the teenage girls (prior to marrying then off). Female genital cutting is also known to complicate pregnancy and adds to the risk of maternal mortality.

Education

Female genital cutting almost always leads to girls dropping out of school those who return drop off on getting married. Early marriages thus affect educational attainment and opportunities for paying jobs. This makes the woman dependent and reduces her ability to independently may not be able to seek health care during emergency due to lack of money.

Socioeconomic

Low socioeconomic status, poor education, early marriage and social pressure for childbearing confines the woman to domestic and reproductive responsibilities. The woman's dependent position does not allow her to seek any health services including maternal health services like contraception. A high number of pregnancies is a risk factor for maternal death. The TFR for uasin gishu is 7 which high compared to the national average for the country at 4.9². Thus combination of pregnancy at young age and high fertility increases the number of high risk pregnancies (See table 2)

Gender

Household finances, knowledge (education level) and balance of power within the household also influences the health care services utilization. Poor households have little at their disposal that can be converted into ready cash. This is a major constraint in time of illness where liquid money is required. Within the community women have little control over the finances⁹. In Uasin Gishu a large share of the work on the farms is done by women however the social norm is such that the income from this is received by the men after the harvest. As Claeson et al have pointed out, without her own resources the women have difficulty making decisions that require her to seek health care during times of need, including pregnancy.

Perceptions

Perception can be formed through experience or the experience of others. The services received by the woman previously can deter her from coming for the services. No specific study was found on perceptions of costs in the district. There is however a survey done nationwide perceptions of quality of services. Rift valley province scored highest on client satisfaction index¹⁵.

A study done in Nigeria¹⁷ underscored the factors that clients felt were important in achieving quality of care. The view of participants was that the physical appearance of the health facility coupled with availability of drugs, insensitivity to patients suffering, long waiting times, all contributed to quality of care. Punctuality and favoritism of health staff and poor communication with patients are other factors. The perception of the woman is formed by her previous experience and the experience of others. If she got poor services from the facility she may choose not to deliver in a facility.

A similar study done on women in a slum in Nairobi pointed out that women go to the TBAs because of the poor service they get from providers in the hospitals¹⁷.

Previous experience

In a study done in India¹⁸ it was shown that women who had attended ANC more than 5 times were more likely to deliver in a health facility. This was done in an area with similar population characteristics in terms of poverty as Uasin Gishu. Complications in a previous delivery were also a positive factor for hospital delivery in this study.

In Uasin Gishu the women who come for the postnatal clinic are mainly those who have had a complication. These are the women who are usually well informed by the clinicians of their risks. However there have been cases where clients have not been informed why a procedure like cesarean section was done and they opt not to come to the health facility the following time sometimes with disastrous consequences.

Traditional rituals

There was no literature found on cultural aspects involving the kalenjin and from my experience there are no rituals involving birth or birth place. However in my opinion as has been found by other author's age, education and the socioeconomic status would strongly dictate the first delay. This is the same view as expressed by WHO¹⁹.

5.2 Factors determining second delay

Geographical:

Distance to the facility can both be an obstacle or a disincentive for seeking care¹².

This is measured as the percentage of the population living sufficiently close to have service from the delivery points^{13,14}. It is dictated by the location of services, the terrain of the area, the roads and their conditions in the different seasons. It is also important for the services to be located where the majority of the users are. For other conditions the distance to the health centre may be tolerable but for a pregnant woman especially in labor especially in labor probably on bad road even if it is just one kilometer may not be so easy. The distance or time it takes to reach a health facility has been cited as a reason why women choose to deliver at home. This is made worse in rural areas where all-weather roads are scarce and a vehicle may not be readily found within the community or the owner may not be willing to risk transporting the patient at night.

In Uasin Gishu the hospitals are found in the town centre. The health centres are distributed as per division and population density. There is no reason to believe that there is no equitable distribution of these facilities. This being an agricultural area there are vast areas under cultivation which a woman may have to traverse before reaching the facility. Reaching the facility may be a challenge especially when in labor considering the travel time. As Thaddeus and Maine¹² indicated this may act as a disincentive and even if the women had planned initially to deliver in hospital.

Health facilities are situated within 1 hour of walking for almost 50% of the population⁷. This is from the national survey and it's not possible to tell what sort of facility they were referring to. If even dispensaries were considered in this study then this may not be very useful for a woman with obstetric complications.

The distance to an asphalt road in Uasin Gishu is 5km or more for 84% of the population. This on its own is a disincentive for a pregnant woman. This is an area with many rivers and streams. It is also a region with high rainfall for up to 8 months in a year. During the rainy season the roads are impassable and the bridges can overflow or be washed away making it impossible for the vehicles to pass. The terrain is also difficult and insecure in some areas which will take more time to reach the facility^{12, 20}.

Transport

There is no organized transport system in the rural areas. From personal experience majority are private vehicles which run on non specific schedules. They ply the roads depending on chance of finding commuters. For a woman who requires emergency transport the cost would be paying for all the empty seats. This is not affordable to many women in the rural areas. The option is usually to wait until the vehicle fills up. Women have been known to deliver in vehicles before reaching a health facility.

Proximity to maternal health care services determines use by women. Long distance to the facility is an obstacle to receiving adequate antenatal care, more so if it involves the need to be carried in a vehicle (as is needed for a woman in labour). Maternal health care services even if they are free, would be expensive if they are situated far because of the costs of traveling²².

Costs:

The direct cost of delivery in Kenya includes official fees for delivery care, bed stay, drugs and supplies. Apart from this there are charges incurred by the women these are the transport costs, food for the woman and for the caretaker. In the health centre and dispensaries as said above are not allowed to charge service charges for obstetric care. There's a nominal fee of 10 and 20 shillings for dispensaries and health centre respectfully for registration. Apart from the registration fee chargeable at the health centre there are other informal/unauthorized charges by the staff for drugs or supplies or care. This is understandable, since there are shortages of supplies and no provisions for purchasing these essential at the local level. In addition there is the issue of informal/ unauthorized payments (bribes) that might be demanded on some cases. Majority of those who deliver in facilities, deliver in hospitals where the costs of services are higher. Perkins²³ estimated the total out of pocket cost and found that the average cost for a complicated delivery was about 35% on the monthly income in Kenya. Medical costs were found to be lower than the total of all the other costs incurred including opportunity costs.

Apart from farm work women are expected to look after children and the household chores such as looking for firewood and water. When a woman has to go the health facility someone has to do these chores and probably will have to be paid. These costs plus the cost of hospital visits to the partner and someone to take care of her while in the hospital have to be borne somehow. On their own they can deter the woman from going to the hospital.

In a study done in a Nairobi slum women gave several reasons why they were electing to be delivered by the TBAs: costs of delivering in a hospital were high (transportation, laboratory, bribes, and supplies), mistreatment by providers because of their poor economic status and including forced HIV testing²⁴. This also may be an issue to be explored in uasin gishu as these are also rural women who may have limited cash. No study was found to explain whether women who did not deliver in health facilities preferred TBAs because of cost.

In Kenya 46% of the population is said to be living on less than a dollar a day. The costs per bed according to health facility are estimated as \$19 and \$35 for a district and tertiary hospital respectively. As Kinuthia²⁵ points out, and given the fact that 42% of people in Uasin Gishu live below the poverty line, many in the rural area cannot afford services even when they are available or geographically accessible.

Fifty two percent of poor households cite financial difficulties as a reason for not seeking h/care in a study in Kenya. 98% of the people in the lowest quintile have no health insurance. Whereas NHIF membership is mandatory for all civil servants and formal sector employees the self employed and informal sector workers join on voluntary basis. Majority of people in Uasin Gishu are subsistence farmers and have no insurance coverage²⁶.

Though inability to pay is a factor to some, the most critical barrier to joining NHIF was of lack of knowledge on health insurance and procedures of enrolment. NHIF covers costs for inpatient services and would reduce the costs for delivery as single insurance sum covers the whole family (of five members)²⁶.

In Kenya maternal health services are free of charge at all public health centres and dispensaries (but the patient has to pay a minimal registration fee). Hospitals are permitted to charge a nominal fee for deliveries in consultation with their boards (²⁷). The services are organized such that a woman should be able to deliver in at the health centre level at lower costs. In reality women by pass the health centers to deliver in hospitals. This has been due to poor services at the health centre level. Majority of the women deliver in hospitals bypassing the health centre. The costs may be minimal in the health centre but the woman ends up paying many other charges like lack of supplies and drugs. Delivery in hospitals increases both the direct and indirect costs to the women.

5.3 Factors determining coverage

Availability of health facilities

In Uasin Gishu district as can be seen from table in table 4 there is excess number of CEmOC facilities. The number of BEmOC facilities is also high but as said before they may be classified as such but functionally not able to provide these services. This is similar to the finding in other African countries as studied by Pearson and Shoo²⁸ on availability and use of emergency obstetric services. It was found that there is inadequate coverage of basic EmOC facilities, low use of services and high case fatality rates. This study was done in Kenya, Uganda, Rwanda and South Sudan. Health centres do not have ambulances in case of emergency to transfer patients to the next level. Many times the relatives have to look for their own transport.

Availability of human resources

There is shortage of staff as is reported in the annual operational plan of the district. The number of physicians per 100000 is 7 in the district. At level 3 facilities the nurse population ratio is 12:100000. Emigration and HIV are two factors have led to the current shortages and the subsequent mal-distribution the health professionals. The two have effects on the existing workforce and as it follows, on maternal health care. While no specific study reports on the burden of HIV on health providers in uasin gishu a nationwide survey indicates that 40% of health workers had a family member who was HIV positive or who had died of AIDs. 20% were caring for an infected member in 2005. This puts a lot of pressure on the health providers themselves even while also taking care of ill patients. Apart from increased workload, shortage in maternal h/care leads to increased waiting times by patients, lack of sufficient time with patients, poor infection control in workplaces, irritation of health providers sometimes leading to non-responsiveness^{27,29,30}. There are no figures which show how many staff have left service from the district or where they are currently deployed.

At the same time health workers are leaving public health facilities to work for international organizations (within the district) which are better paying. Other reasons for resignations are poor living and working conditions in rural areas. There are more workers in the town facilities than the rural areas in uasin gishu as is shown in the table 2.

The economic opportunities in the developed countries are the attraction for trained physicians from the less developed countries. The developed countries unable to train sufficient for their own needs recruit health workforce from less developed countries at less costs to themselves. In Zambia where there is need for 1500 doctors there are

only 800 registered despite the fact that the medical school has been training doctors for the last 23 years only 50 are in the public service³¹.

As Dovlo³² rightly said there is also wastage of human resources in health facilities. It is common practice to put physicians who are highly trained in specialized areas as administrators in hospitals or other capacities totally unrelated to their specialty. This is the same as with nurses. Not only does it lead to poor use of workers, it also lead to the workers not realizing their full potential even when they are fully employed. In uasin gishu the main administrators in hospitals including private ones are doctors which take away most of their time away from service provision to patients.

Another workforce wastage he has pointed out is the training of staff and having no capacity to employ them. Uasin gishu has a training school for nurses and clinical officers. At the same time the university every year produces qualified nurses. Many of these are currently unemployed even as there is shortage in the facilities^{32,33}. Kenya has thousands of unemployed eager to be of service but has no capacity to employ them. This is because of the IMF rules concerning expenditure on wages which were being applied until recently. The IMF did not specify health workers should not be employed but that the wage bill should be suppressed and so hiring of health personnel has been curtailed.

Table 2: Cadres of health workers as reported in the annual operational plan 2008/9¹⁰

	Description	Public			FBO		NGO		tertiary
		Level 2	Level 3	Level 4	Level 2	Level 3	Level 2	Level 3	Level 5
1	Consultants	-	-	0	-	-	-	-	55
2	GP (MD)	-	-	5	2	-	-	-	
3	Clinical/ Officers	-	11	17		-	-	-	69
4	Nurses	75	101	49	25	38	7	8	491

Each division has one or two health centres and several dispensaries. Clinical officers are in charge of health centres and the general practitioners are mainly at level 4 in the public services. There are 53 dispensaries and 23 health centres, 1 district hospital, 1 tertiary hospital.

Table 3: Current staff requirement as at 2007⁵

		nurses	Clinical officers	doctors
Level2	Available	107		2 (FBO)
	Required	162		0
	WISN ratio	0.66		-
Level3	Available	147	11	0
	Required	322	46	0
	WISN ratio	0.46	0.2	
Level4	Available	49	17	5
	Required	68	72	6
	WISN ratio	0.72	0.24	0.8
Level5	Available	491	69	55
	Required	212	16	39
	WISN ratio	2.31	4.31	1.41

The district hospital shows high Workload Indicator for Staff Need (WISN) ratios but when it is considered as a teaching hospital instead of a level 5 facility then it is clear there is shortage of staff especially doctors because the majority of the doctors are specialist consultant/lecturers involved both in teaching medical students and providing clinical services but the real numbers of medical officers within the hospital is much lower. This hospital serves as a national referral hospital, receives patients on referral from hospitals within and outside the country and also has facilities for training medical, nursing and allied students

In Uasin Gishu like the rest of the country health workers as a profession has seen erosion in prestige and appreciation. It is not a lucrative profession to be in, and salaries are low, working conditions are poor. This has been evidenced by the number of times the workers have gone on strike in the past. Decent salaries and improved working conditions including adequate drugs and equipments would motivate the workers. In Kenya workers strikes are usually followed by intimidation then sacking. This situation in contrast to that in Sri-Lanka and Malaysia¹⁹. These are countries with the best maternal health indicators in the developing world. How they did it- they started by valuing the midwives and gave them decent salaries. This improved the image of the profession and respect in the communities. In turn this increased the utilization of the services and the impressive drop in maternal mortality. A USAID funded report on human resources for health in Kenya reports that to achieve the MDGs by 2015 the number of health worker providing delivery care should be doubled³⁴.

Supervision

The district health management boards are required to have at least 4 meetings in a year. This does not happen. These boards also don't do supervisory visits to hospitals. This oversight leads to lack of implementation of preventive, promotive and curative services in

health facilities³⁵. This was a study done in selected district offices in Kenya and I can say from personal experience that the situation is similar in Uasin Gishu. Supervisory visits require tools, supervisors' time, travel and per diem money. With the insufficient funds within the ministry available this may not have been possible

Availability of clinical guidelines

There is no mention of lack of clinical guidelines as a priority in the district health plan. There are several guidelines in use in the district like the syndromic management of STI's, prevention of mother to child transmission of HIV, malaria etc. the presence of guidelines does not necessarily mean they are being used. The study of Stanback et al, showed that training on guidelines followed by supportive supervisory visits are much more effective and deepen the providers' knowledge, attitude and practices³⁶. With the shortage of drugs and lack of in-service training it is difficult to say whether the guidelines are used as recommended.

Availability of services

As described in 2.1.5, there are national level norms and standards for services that should be available at various levels in the public health services⁵. While, there are no publications documenting the actual availability of services in Uasin Gishu, from my experience I can say the following:

At Level II: at this level contraceptives can be provided and antenatal and postnatal care. They should also give iron for anemia prophylaxis. These are services which are not provided due to shortages of staff and drugs.

At Level III: level three services that are missing are BEmOC facilities which are very important in maternal mortality. They are supposed to be able to remove placenta or remains of conceptus. This is not possible at this level. There are no equipment for manual vacuum aspiration at this level. The policy dictates only doctors perform this procedure.

At Level IV: all functions related to maternal health care are possible at this stage. The limiting factor is the cost to the patient and the distance to the facility.

In addition the situation keeps changing (both improving and deteriorating), depending on many factors (Both local and national). A detailed discussion on these factors is beyond the scope of this work.

It is appropriate to mention here that there are no explicit services at levels I, II and III for addressing abortion related complications. Given

the fact that abortion related causes make up a big chunk of all maternal deaths in Uasin Gishu district, this is a big gap in the availability of services.

Availability of material resources-

The AOP of Uasin Gishu district has noted that there is need for equipment and supplies for maternity services as a priority. There is insufficient and limited choice in contraceptives and antimalarials. There is shortage of drugs in all public health facilities in Kenya. This is evident from public outcries in the media. A survey conducted by a civil society showed stock out in public health facilities of many essential drugs. A senior official in the ministry reported that the shortage due to insufficient funds³⁷.

Kenya Medical Supplies Agency (KEMSA) a parastatal which was established to supply drugs to the public facilities has not settled the bills for procured drugs. Among other issues it has are governance and autonomy of the parastatal. This has led to the sacking of the director of KEMSA amidst charges of corruption³⁸.

The current shortages even of contraceptives in public health facilities are a cause of concern. This may lead to increased incidences of unsafe abortion with subsequent complications and maternal deaths. A study was done to examine whether there is adequate supplies/equipment. It used availability and completeness of delivery sets as proxy in the health centres. In Rift Valley it was found that 80% of the facilities had delivery sets but 62% of the time they were not complete. Only 16% of facilities offering delivery facilities had a vacuum aspirator and 14% had a dilation and curettage kit for management of incomplete abortions. This is probably worse in rural areas¹⁵.

Utilization and adequate coverage of maternal health services-

Utilization is the percentage of the target population using the services at least once. It measures acceptability of the services to the population. In maternal health some of the services offered more than once are Ante-Natal Care (ANC), tetanus toxoid vaccine, intermittent presumptive treatment for malaria, postnatal care and contraceptives. This also includes facility based deliveries and deliveries by a skilled birth attendant which also affect maternal mortality^{39,40}.

Adequate coverage of services is the proportion of the target population receiving a complete intervention. It measures compliance with the services provided^{14,16}. The indicators are those interventions that are provided more than once or that require multiple visits to the facility. In maternal health these are 4 antenatal visits, tetanus toxoid

injections- 2, and intermittent presumptive treatment for malaria – 2doses.

As shown in table 4, 50% women find the maternal health services acceptable. The compliance with interventions however drops to very low levels. Only 6% make 4 antenatal visits. This is the same trend up to deliveries in EmOC facilities. Like the demographic survey of 2003 reports more than 90% attend ANC at least once but only 40 % deliver in health care facilities. The objective of the ministry is to increase skilled attendance at birth to 90% by improving management of pregnancy related complications and unsafe abortions. The CPR for the district is also very low compared to the 39% national average.

Women in a Nairobi slum reported that the only motivation for going to deliver in hospital is when one anticipates a difficult/complicated delivery. These Women believed TBAs have the ability to conduct normal deliveries but hospitals are for complications. Thus they attend antenatal clinics religiously and learn about their pregnancies then prepare for home deliveries if there are no complications anticipated. They also recognized TBAs could not provide antenatal care as they did not have skills to identify obstetric risks. Contrary to what is always assumed that women deliver at home because they don't know the risks, these women made their choices after 'being informed' of the risk at the ANC not out of ignorance³¹. No qualitative study on the reasons why women do or don't attend ANC was found. Both groups being from the same socioeconomic background makes it worthwhile to examine the factors for Uasin Gishu²⁴.

Effective coverage-

Contact with the providers will not necessarily end in a favorable outcome to the user. Effective coverage is the measure of technical quality and is the likelihood that if an intervention is used there will be improved health outcome. Technical quality depends on the training and existence and use of appropriate guidelines and supervision of the providers. Some of the indicators that are sensitive to quality of care and can be used in maternal health are maternal mortality rates, perinatal mortality, case fatality rates for abortions, and case fatality rates for obstetric complications^{14,39}.

Most maternal deaths occur during labor or postpartum period. Most complications are unpredictable in fact most of the elements of routine care have little or no impact in predicting whether a woman will develop an obstetric complication or not. Once there is a complication the routine care given antenatal will not help the woman. Thus emergency care must be available and accessible and this is necessary if maternal mortality is to be reduced. Wide coverage with ineffective

interventions which are cost effective just provides an illusion of doing something but achieving nothing in addressing the actual causes of death⁴⁰.

For maternal mortality to drop all women must have access to care that includes:

- 1 A skilled birth attendant
- 2 Access to emergency care
- 3 Referral systems that ensure women who need emergency services get them on time¹⁹.

A skilled attendant conducts routine deliveries and can reduce maternal and perinatal mortality by competency to manage normal delivery including the third stage of labor where PPH is a common complication. However if the labor is complicated and there's no back up for emergency services no matter how skilled the provider is the woman may die. Even under all the best conditions >10% of labor develop into complications but many can be managed when emergency services are accessible and utilized¹⁹.

Thus in 1997 WHO/UNICEF/UNPFA issued the guidelines for monitoring the availability and use of obstetric services. In these emergency care is divided into basic and comprehensive according to 8 recommence signal functions. These are meant to assess availability utilization and quality of services. It's not enough to deploy a skilled attendant and imply that they should be able to refer complicated cases if the facilities to refer do not exist^{19,39,41}. See annex 2 and 3

There are various reasons why women may not be using the services:-

1. No physical access- discussed under factors of delay above
2. High cost- discussed under factors of delay above
3. Poor information on availability of services.
4. Inadequate health services-this includes shortages of staff, drugs and other supplies; non-responsive staff. This is discussed under human resource above
5. Poor quality of care- lack of knowledge in management of patients due to lack of in-service training, lack of guidelines and supplies to adequately manage conditions. Discussed under human/material resource above
6. Delay in referring the woman –lack of a functional referral and transport system between the lower and higher levels of care.

Table 4: Coverage indicators for Uasin Gishu district for 2007

Indicator	Coverage Uasin Gishu%	Coverage Kenya % ²	WHO recommendation
Women Reproductive Age receiving FP commodities	12%	39%	75%
ANC 4 visits At least 1 visit	6.3%	52 90%	90% pregnant women
Women delivered by SBA	22.9%	44	90
IPT 2 At least once	30% 57%;	25% 59.6	90
Number of maternal death audits	0		100
Health facilities providing -BEOC -CEOC	 26 (16:500,000) 6 (3:500,000)	 2.7/500,000 1.7/500,000	At least 5 EmOC facilities with at least 1 also offering comprehensive care per 500,000 population
C/S Rate	15.9%	4	5-15%
MD (case fatality)	-		<1%
Met Need	19.32%		100%
Total Deliveries In H/Facilities	9.96%	40	At least 15% of all births in the population
(1,2)Tetanus toxoid	44; 24%	51.9	
PNC one visit	44%	10	

This table shows the different percentages of indicators. When compared with the national averages they are all very low

District management/Governance

In the Safe Motherhood Initiative goals in 1987 it was thought that maternal mortality could be solved through improvements in women's status and education, family planning and antenatal visits. These did not work instead shifted responsibility away from the primary actors who are the policy makers and obstetricians. To reduce maternal mortality essential obstetric care must be within reach of all populations. This will only be achievable if politicians, public health workers and obstetricians work together to make available high quality obstetric care services⁴².

The key problem of workforce shortage in low income countries due to emigration is mainly due to the wealthier countries not producing sufficient staff for their own populations. This is an international issue that the government must tackle. The government who are using this cheaper way of getting health staff at the expense of others must be

able to compensate those loosing out. It must be recognized that the fundamental issue underlying emigration, inequitable access to h/care and inequitable health outcomes, "is the vast and unjustifiable difference in wealth between the few rich and the many poor countries"²⁹.

An evaluation done in on the health management system in several districts showed that although $\frac{3}{4}$ of District Health Management Board (DHMB) hold meeting frequently and had plans for improving reproductive health and yet less than a $\frac{1}{4}$ of them reported implementing their plans on time. This may be one of the causes of the poor reproductive health indicators in the country including for maternal health³⁵.

Maternal audits- A district based audit of maternal and perinatal mortality where health providers, policy makers and community members were involved was started in 1994 in south Kalimantan Indonesia. The audit has led to changes in the quality of obstetric care especially due to enhanced accountability of both providers and policy makers. It also improved relations between providers and policy makers. It also improved relations between providers and the community⁴³. Maternal audits are not for punishing but for exploring the circumstances that led to a maternal death and learning from it. On the basis of the factors identified the audit team the designs management initiatives, proposes additional training and recommends changes in clinical protocols or policies.

An effective health management information system is essential for planning implementation monitoring and evaluation activities in the district health services. Following the decentralization of decision making process to the districts in 1984 different types of information systems have been introduces at the district level. All had similar characteristic: they were donor driven, there was no involvement of the users, there was no involvement of the operators, and they never collected or received data fro private hospitals or local authority facilities or NGOs providing health care in their districts.

Health workers are spending large time collecting data that is never analyzed or used at the point of collection never compiled or summarized the data into a useful tool. The collected information never reached the district health management team⁴⁴.

The result is that today it is difficult to gauge whether the information from different sources is accurate as the reports from the districts may have different figures from the ones in the provinces. Figures such as maternal mortality and abortion are highly sensitive. The district data may not contain information from all the health providers in the

district and the private providers and parastatal don't seem to be obligation to submit their reports to the district office.

CHAPTER 6: STRATEGIES THAT HAVE SUCCEEDED ELSEWHERE AND APPLICABILITY IN UASIN GISHU DISTRICT

6.1 First delay strategies

Education of the girl child- education is free in primary schools in Kenya. This has gone a long way in educating girls who dropped out because of fees. Others dropped out to give way to brothers to get the education instead. Interventions to improve girls and women's education have been done in different countries. To eradicate FGC and educate girl's community education, was tried in Senegal and Egypt and was found to improve on women's knowledge of their health rights. The communities were ready to abandon FGC. This is similar to alternative rites that are practiced in many other parts of Kenya.

Use of parents and other members of community as change agents is another intervention that has been found to work. Those who are against certain traditions can be used as advocates against FGC and early marriages.

Legislation on age of marriage- the legal age of marriage is 16 years for statutory marriages. There is no set legal age of marriage for Muslim or customary marriages. There are many cases of early marriages contracted traditionally. This makes it very easy for fathers/parents to give away their daughters for dowry even at very young ages. Several advocacy groups are lobbying for the legal age or the age of consent to be raised to 18. This will reduce the number of pregnancies that a woman will carry and therefore reduce maternal mortality

One of the strategies which have broadly brought about change to the education of the girl-child is the abolition of school fees in Kenya. If compulsory education for all children is also enforced it will ensure that girls/women remain in school for a longer time. This increases the chance of getting paid from outside the home and thus independence for the woman. Education combined with employment that is fulfilling also goes to limit the number of children a woman can have and improves her self image and decision making power. Education also removes belief women were born to suffer in childbirth and sometimes even die (fatalism).

6.2 Second delay strategies

Location/distribution- the only possibility is development of the infrastructure.

Distance

In East Timor midwives were provided with motorcycles so that instead of the pregnant woman being transported to the facilities the providers would go to the women⁴⁴. This is costly and considering the shortage of health workers it is not feasible otherwise the facility will be left with no workers when a woman is in labor. However if given to community midwives as in the example of Lugari it will be similar to having a skilled worker available 24 hours within the community⁴⁵. This also improves coverage of maternal health care services.

To improve accessibility to hospital care at the time of delivery maternity waiting homes (MWH) have been initiated as the answer. In the case of Mbegerwa district in Zimbabwe⁴⁶ was found to be successful.

These homes have been found to reduce maternal and stillbirth rates amongst women using them compared to those who opt to travel long distances to the hospital when in labor. This is quite a feasible intervention. Currently constituency development fund is being used to build new health facilities. It could instead be used to pay for such homes. However the politics behind such a move would involve how each constituency will contribute to sustaining the women in the home. Again as said before women have many chores they fulfill and there should be an initial assessment of the community before or like the case of Ghana it may turn out to be a white elephant.

Transport

To reduce maternal mortality in rural areas requires good referral systems and facilities with EmOC services. This has been achieved in countries like Cuba, Sri-lanka, Malaysia and Tanzania. In Sri-lanka field health providers were authorized to incur expenses in transporting women in emergency situations when there were no official vehicles which would be reimbursed later⁴⁴. This is prone to abuse if it is private vehicles. And still the problem with roads remains the problem with infrastructure remains. If however the vehicle is the ambulance it is workable as this means it is for fuel.

Costs

In Ghana⁴⁷ to increase number of skilled birth attendant deliveries a free delivery care policy was introduced in 2003. The policy covered delivery services in public and private and faith based organizations. Though the policy was considered favorable both by the users and

providers the policy was not supported with adequate funding and almost ended in failure. It was of more benefit to the rich than the poor, the quality of services remained poor. Other barriers included transportation costs to facilities, costs of medicines and other supplies, cultural and social barriers, and preference for traditional birth attendants were not addressed. The health insurance is therefore covering the costs of maternal health care in addition to other health care needs. This is a good intervention but it can never be free somehow the costs have to be recovered. This will mean increasing either taxes or contributions to the national insurance. If it is done the beneficiaries will still be the rich if it is in all public hospitals. There should be a cutoff on who can use this facility and who cannot which should depend on income. This can be modified with the provision of vouchers like in Bangladesh such that only the poor can apply and get the vouchers which they present for services^{48,49}.

A community loan fund system to be used to pay either the transport or other costs of delivery was found to be successful in Nigeria for emergencies⁴⁴. This is similar to the 'harambee' system in Kenya where in case of emergency neighbors contribute. If it is developed into a constant fund there will be other management issues. It will work if the community has management capacity and if there are many defaulters it may easily collapse.

As has been show by the study and example of Tanzania the costs for delivery are less if the patient deliver in health centre²³. This would be the ideal in Uasin Gishu. There are many health centers and all it requires if improvement of the human and material resource and improve on the quality of care. These health centre are close to the women.

In some countries women have learnt methods of safe self induction of abortions like Brazil by using misoprostal. The result has been fewer complications and shortened stay less costs in hospitals⁵⁰.

6.3 Third delay strategies

Human resources

In Ghana health workers in the rural areas who were mainly nurses and clinical officers were trained in postabortal care including use of the manual vacuum aspiration kits. This task shifting is mainly due to lack of sufficient doctor. Not only were the lower cadre providers able to provide the services but were also involved in giving community talks on abortion and its complications and the importance of seeking care. The community was also informed of the availability of the services in the health centre and this reduced the cost of traveling to

referral centers in the main towns⁵¹. In Uasin Gishu and Kenya in general MVA has remained a physicians procedure despite the fact that private midwives have been trained to provide the same. This is quite a feasible intervention since clinical officers are able to do the procedure in the hospitals.

The UK which has been recruiting nurses from many low income countries has set guidelines for recruitment from developing countries that have shortages of their own. For example it has agreed with Ghana to employ nurses for specified periods and employ them in specified specialties. Repatriation of some of the nurses earning was not negotiated but this would form indirect returns for the amount invested in training the nurses⁵⁰. This would be negotiated at the ministerial level. The other government should then support the training institutions of the losing governments. This should be the same principle as with NGOs.

Due to shortage of doctors and the high cost of training Malawi introduced a midlevel cadre of professional – clinical officers who are trained and licensed to perform surgery after their internship. The outcome of surgery performed by clinical officer was similar to that performed by medical officers. As a result they are able to perform c/sections in the health facilities where there is a shortage of doctors. Mozambique also has a similar intervention⁵¹. This is a possible strategy however the health centres have to be upgraded first. The current situation in Kenya is that there are doctors at the hospitals and the services are required at the health centre level. This would mean creating sub-district hospital. This would be an excellent intervention but with the current economic situation in Kenya this may not be possible. The costs to achieve this are enormous.

Equipment/drugs/supplies-

Experiences from Ghana, Malawi and Zambia have shown 4 areas to focus on in order to improve FP services provision. These were named the A,B,C,Ds of family planning:

- Available supplies- the commodities have to be available. In this case a variety was also available.
- Basic systems for delivery – the commodities must reach the facilities and providers must get irregular updates.
- Community involvement-decentralizing access and bringing services to the rural areas. This is where majority of people in sub-Saharan Africa live.
- Demand creation –information education and communication plays a critical role in FP programs. There are many misconceptions/ misperceptions and lack of information about particular methods that should be cleared to allow the users to

choose best options for themselves⁶¹. We can emulate this in Uasin Gishu since the current fertility rate is quite high at 7. high fertility increases high risk births and risk of maternal mortality

Service provision

All pregnancies carry risk of complications. With this acknowledgement some countries are advocating a birth act where a woman agrees and signs. She also designates certain individual/s to co-sign (someone who can make a decision on her behalf in case she is unable to do so herself). Apart from the usual birth preparedness points in the antenatal visits this has complication-readiness plans like: the accompanying person during delivery, emergency fund or source in case of emergency, emergency source of transport, blood donors, name of nearest EmOC facility, means of communicating for help (with SBA, health facility), birth attendant⁵².

Provision of family planning services: the different levels are organized such that there is provision of contraceptives up to the dispensary level except for the surgical methods. These have been lacking. Lack of contraceptives can lead to unwanted pregnancies and maternal mortality due to unsafe abortions.

Provision of abortion services: post abortion care is only available at the district level. These are hospitals in town and the majority of people live in the rural areas. The reason for this is the policy within the ministry that it is a service that can only be provided by a physician.

Legislation/political

Different steps have been taken in different countries to reduce deaths from unsafe abortions. In some countries abortion laws have been liberalized and in others restrictive laws have been debated on and changed. Even in those where the law was not change it has been possible for women to get postabortal care. More midlevel cadres have been trained on postabortal care with resultant fewer deaths⁵¹. This is currently a hot debate in Kenya and the outcome is awaited.

Cuba in 1959 using the WHO definition of health extended abortion services to all hospitals. In 1979 when a new law was enacted instead of specifying when it was legal it specified instead when it was illegal i.e. when carried out without the woman's consent, when carried out anywhere other than hospital, if the provider did not follow established norms or if it was done for profit. This made it possible for women to use the services without fear and for the doctors to provide the services without fear of legal consequences⁵¹. This will have provider's resistance as providers also have rights and some will refuse to

provide the services. The information on where it is available should be clear and the stigma and shame associated should be addressed.

In Mozambique though abortion is illegal the services have been available in the main hospitals⁵¹. Post abortal services should be available in all facilities from level 3.

CHAPTER 7: CONCLUSIONS

The factors influencing the risk of maternal mortality in Uasin Gishu district that were found in this review were:

- 1.** Early marriage and the pressure to bear children early and to bear children early to carry more pregnancies is a key factor increasing the risk of maternal mortality.
- 2.** In Uasin Gishu the tradition of FGC and early marriage leads to poor educational attainment among women and consequently low chance of employment, this makes women to be financially dependent on husbands. Thus women, even if they are socially able to take decisions to seek care, they are not able to do so because of financial dependence.
- 3.** The accessibility of the CEmOC facilities which are in the town is poor. The BEmOC facilities may be classified as such but may not be functional as such. This is an area where majority live more than 5km from a tarmacked road and during rainy weather access to the hospital may be impossible.
- 4.** No community initiatives are available for women to live near the hospital to reduce the distance from home during labour.
- 5.** The health centres which are supposed to provide delivery services are not able to provide such services due to shortages of staff, drugs supplies and do not even have an ambulance to transfer clients to higher levels in case of emergency.
- 6.** The hospital delivery costs are high majority of the residents of Uasin Gishu. These are farmers whose source of income is from the harvest. They have no health insurance and there are no organized mechanisms to borrow this money within the community.
- 7.** Availability of facilities is on the higher side with the numbers of facilities being higher than those recommended by WHO. The problem is they may not be functionally working as they are classified.
- 8.** There are guidelines/clinical protocols available but due to lack of funds there are no in-service trainings or supportive supervision going on. It is therefore difficult to judge whether they are being followed or not.
- 9.** The combination of low pay, poor working conditions and lack of appreciation is leading to resignations of staff to private health facilities and NGOs.
- 10.** There is shortage of drugs and supplies in the facilities. This is leading to poor quality of services.

- 11.** The health service factors take a big chunk in the problem of maternal mortality in Uasin Gishu. The services can be brought closer to the women to reduce the costs.
- 12.** There are no maternal audits at the district health offices done. There is no accountability to the community as far as maternal deaths and the causes are concerned.
- 13.** There is a serious problem with contraceptives which should be available up to the lower levels. This has serious consequences as the number of unsafe abortions can rise and maternal mortality.

RECOMMENDATIONS:

To improve maternal mortality in Uasin Gishu there is need:

1. To improve the socioeconomic condition of the women by curbing the culture of early marriages, improving on the education of girls. Women should be supported through financial channels to move out of cocoons of poverty and fatalism.
2. To reduce the distance to the hospitals during labor the community should be encouraged to set up maternity waiting homes. This is possible using the constituency development fund rather than build new health facilities.
3. Start community initiatives for financing part of maternal health costs incurred for transport and stay at the hospital.
4. In order to maintain staff at the lower levels we need to improve on the living conditions for staff at the rural centre, motivate them by incentives and better pay, train a lower cadre that is not likely to likely to migrate and use task shifting.
5. Institute continuous professional development and in-service training for all cadres of staff and monitor them.
6. The ministry of health should take its responsibility seriously and avail drugs that are essential at the lower facilities.
7. We have a problem with unsafe abortions and their complications. Contraceptives should be made available at all levels. Further to that nurses and clinical officers should be trained on manual vacuum aspiration and the equipment availed at health centres. This is where majority of the women live and maternal health services should be expanded to reach them including post abortal care.

1. References:

1. Office of the Prime Minister, Ministry of State for Planning
National Development and Vision 2030, Kenya Medium Term Plan
(2008-2012) Chapter 5 pg 102
2. Central Bureau of Statistics/ ORC Macro international USA
Kenya demographic and health survey 2003
3. Central bureau of statistics,
Ministry of Finance and Planning
Kenya 1999 population and housing census
Volume XI
Analytical report on gender dimensions
August 2002. Pg 6-84
4. Ministry of health
National health sector strategic plan of Kenya
Norms and standards for health service delivery
June 2006
5. Kenya national bureau of statistics
Economic survey 2008
Chapter 3 pg 79
6. Ministry of finance and planning Kenya
Uasin Gishu district PRSP consultation report for period 2001-
2004
Ch 2 Pg 4-6
7. Kenya National Bureau of Statistics
Ministry of Planning and National Development
Basic report
Kenya Integrated Household Budget Survey (KIHBS) – 2005/06
Ch 10 Pg 193
8. ministry of finance and planning Kenya
Uasin Gishu district PRSP consultation report for period 2001-
2004
Ch 2 pg 4-6
9. Claeson M, Griffin C, Johnston T, Mclachlan J, Soucat A, Wagstaff
A, Yazbeck A. Health Nutrition and Population Ch 18, Pg 201-230
10. District health plan 2008/9
Uasin Gishu district

11. Ministry of health
Rift valley province
Reproductive health report summaries January to December
2007

12. Thaddeus S, Maine D.
Too far to walk: maternal mortality in context
Soc, Sci. Med. 1994; Vol 38, Nr 8: Pg 1091-1110

13. Tanahashi T.
Health service coverage and its evaluation
Bulletin of the world health organization (1978) 56 (2): 295-303

- 14.** Knippenberg et al
The Bamako initiative: children in the tropics; 184/185
international children's center Paris, 1990: Benin Guinea
Conakry model

- 15.** Muia E, Ndavi M, Olenja J, Kizito P, Curtis S, Hyslop A.
Factors that affect contribute to the utilization of quality
reproductive health care:
Findings from further analysis of the Kenya service provision
assessment of 1999
National council for population and development Nairobi, Kenya
2003

- 16.** Uzochukwa BS, Onwujekwe O, Akpala C.
Community satisfaction with quality of maternal and child
health services in S/E Nigeria
East African Medical Journal 2004; Vol 81:6

- 17.** Izugbara C, Ezeh A, Fotso JC.
The persistence and challenges of homebirths: the perspectives
of traditional birth attendants in urban Kenya
Health Policy and Planning 2009; 24: 36-45

- 18.** Chandiok N, Dhillon b, Kambo I, Saxena N.
Determinants of antenatal care utilization in rural areas of India:
A cross sectional study from 28 districts
Journal of Obstetrics and Gynecology of India 2006; Vol 56
(1):Pg 47-57

- 19.** Freedman L, Wirth M, Waldman R, Chowdhury M, Rosenfield A
Background paper of the millennium project task force on child health and maternal health.
April 2003
- 20.** Ensor T , Cooper S
Overcoming barriers to health service access: influencing the demand side
Health Policy and Planning, 2004; 19 (2): 69-79
- 21.** Gebreselassie H, Gallo M, Monyo A Johnson B
The magnitude of abortion complications in Kenya BJOG sep 2005 (112);1229-1235
- 22.** Magadi M, Madise N, Rodriguez R
Variations in antenatal care between women of different communities in Kenya.
Dec 1999 Available from URL:
<http://www.apihrc.org/documets/workingpaper14.pdf>
[Accessed 14/7/09]
- 23.** Perkins M, Brazier E, Themmen E, Brahimia G, Diallo D, Mutunga A, Mwakajonga T, Ngobola O
Out of pocket costs for facility based maternity care in three African countries
Health Policy and Planning Advance 2009; 1-12
- 24.** Izugbara C, Kabiru C, Zulu E
Urban poor Kenyan women and hospital delivery
Public health reports July-august 2009; Vol 124
- 25.** Kinuthia J
Trading in health care services in Kenya: are we prepared?
Consumer information network November 2002
- 26.** Inke Mathauer, Schmidt JO, Wenyaa M.
Extending social health insurance to the informal sector in Kenya. An assessment of factors affecting demand
Int J of Health Planning and Management 2008; 23: 51-68
- 27.** Kenya Ministry of health in collaboration with the WHO 2007
Service availability mapping

- 28.** Pearson L, Shoo R
Availability and use of emergency obstetric services: Kenya, Rwanda, southern Sudan, and Uganda
International Journal of Gynecology and Obstetrics (2005); 88:208-215
- 29.** Gerein N, Green A, Pearson S.
The implications of shortages of health professionals for maternal health in sub Saharan Africa
Reproductive health matters 2006; 14 (27):40-5
- 30.** Ministry of Health Kenya
National aids and STD control programme,
Preparedness for HIV/AIDS service delivery: the 2005 Kenya health workers survey.
NAS COP 2006; Pg 38-40
- 31.** Bundred P, Levitt C.
Medical migration: who are the real losers?
The Lancet 2000; Vol 356: 245-46
- 32.** Dovlo D.
Wastage in the health force: some perspective from African countries
Human resources for health 2005;3: Pg6
- 33.** Ambrose S.
Preserving disorder: IMF policies and Kenya's health care crisis
Pan-African voices for freedom and justice. Available from URL:
<http://www.pambazuka.org/en/category/features/34800>
[Accessed 14/7/09]
- 34.** Chankova S, Kombe G, Muchiri S, Decker C, Kimani G, Peilemeir N.
Rising to the challenges of human resources for health in Kenya: Developing empirical evidence for policy making.
Ministry of health, Kenya/USAID July 2006
- 35.** Ndavi P.M, Ogola S, Kizito P.M, Johnson K.
Decentralizing Kenya's health management system – an evaluation, Kenya working papers. January 2008 No 1

- 36.** Stanback J, Griffey S, Lynam .P, Ruto C, Cummings S.
Improving adherence to family planning
International journal for quality in health care 2007; 19 (2):
68-73.
- 37.** Mulama J
Contraceptives: stockouts threaten family planning. Available
from URL:
<http://ipsnews.ney/africa/nota.asp?idnews=46854> [accessed
on 14/7/09]
- 38.** Kagiri A
The corrupt KWMSA boss Mr. Kandie must be sacked and
charged in court.
[http://majimbokenya.com.home.2008/10/21/the-corrupt-
kemsa-boss-mr-kandie-must-be-saxed-and-charged-in-court](http://majimbokenya.com.home.2008/10/21/the-corrupt-kemsa-boss-mr-kandie-must-be-saxed-and-charged-in-court)
- 39.** Maine D, Wardlaw T, Ward V, McCarthy J, Birnbaum A, Akalin
M, Brown J
Guidelines for monitoring the availability and use of obstetric
services
UNICEF, WHO, UNFPA
August 1997
- 40.** . Bailey P, Paxton A
Using UN process indicators to assess needs in emergency
obstetric services.
International Journal of Gynecology and Obstetrics 2002;
76:299-305
- 41.** National level monitoring of the achievement of universal
access to reproductive health.
Conceptual and practical consideration and related indicators.
A report of WHO/UNPFA technical consultation 3-15 March
2007,Geneva
- 42.** Weil O, Fernandez H
Is safe motherhood an orphan initiative?
The Lancet, 1999; Vol 354: 940-43
- 43.** Supratikto G, Wirth M, Achadi E, Cohen S, Ronsmans C.
A district- based audit of the causes and circumstances of
maternal deaths in south Kalimantan, Indonesia
Bulletin of the world health organization 2002; 80: (3 Pg228-
235)
- 44.** Talamanca-Figa I.

- Maternal mortality and the problem of accessibility to obstetric care; the strategy of maternity waiting homes
Soc Sci Med 1996; Vol 42(10): Pg 1381-1390
- 45.** Mwangi A, Warren C
Taking critical services to the home: Scaling-up home-based maternal and postnatal care, including family planning, through community midwifery in Kenya
Frontiers in Reproductive Health, Population Council July 2008
- 46.** Spaans W.A, Roosmalen J, van Wiechen C.
A maternity waiting home experience in Zimbabwe
International Journal of Gynecology and Obstetrics (1998); 61: 179-180
- 47.** Ofori-Adjei D. Editor-in-chief
Ghana's free delivery care policy
Ghana Medical Journal 2007; Sep 41 (3): 94-95
- 48.** Rahman M, Rob U, Kibria T.
Implementation of maternal health financial scheme in rural Bangladesh
Population council Bangladesh March 2009
http://www.popcouncil.org/pdfs/2009_BangladeshMaternalHealthVoucher.pdf
Accessed 12/8/09
- 49.** Saikhul I.H.
Demand side financing maternal health voucher scheme in Bangladesh
Maternal and newborn health
http://www.searo.who.int/LinkFiles/FCH_d3-4voucher-scheme-Ban.pdf
Accessed 12/8/09
- 50.** Berer M
Making abortions safe: a matter of good public health policy and practice
The International Journal of Public Health 2005; Vol 78 (5): Pg 580
- 51.** Otsea K, Baird T, Billings D.L.
Midwives deliver post abortion care services in Ghana.
Dialogue IPAS, June 1997; Vol 1: Nr 1
- 52.** Medical migration and the inequity of health care
The Lancet July 2000;Vol 356 (Issue 9225): Pg 177

- 53.** Chilopora G, Pereira C, Kamwendo F, Malunga E, Bergsrom S.
Postoperative outcome of caesarean sections and other
emergency obstetric surgery by clinical officers and medical
officers in Malawi
Hum. Resource Health. 2007; 5: 17
- 54.** Klitch M. Editor
Moving FP programs forward
Learning from the success in Zambia Malawi and Ghana
The repositioning FP case study synthesis report
The Acquire Project/Engender Health Sept 2005 USAID

Annex 1

The indicators that will be used in this review are shown below:

Coverage determinants	Indicators
Accessibility	Location of h/facility (distance, cost, travel time, means of transportation) % population within 5km of health facility. Time taken to reach facility for 89% of the population. % of households who can afford the services(income) Physical access to the h/facility (transport)
Availability of services (human and material resources)	Availability of supplies (drugs, contraceptives). Availability of staff Availability of essential obstetric care
utilization	% of pregnant women with at least one antenatal visit. % of adults using an FP method % at least one TT % at least IPT % postnatal clinic within 2 days
Adequate coverage	% of health facility deliveries. % of women who received two doses of TT % of women who get EMOC on time
Effective coverage	Perinatal mortality rate. Maternal mortality rate Availability of standard protocols Maternal audits done Case fatality rates from abortion complications Abortions/1000live births Gynecologic admissions due to abortion

Annex 2

Signal functions used to identify basic and comprehensive EOC	
<p>Basic EOC services</p> <ol style="list-style-type: none"> 1. administer parenteral antibiotics 2. administer parenteral oxytocic drugs 3. administer parenteral anticonvulsants for pre-eclampsia and eclampsia 4. perform manual removal of placenta 5. perform removal of retained products of conception (e.g. manual vacuum aspiration) 6. perform assisted vaginal delivery 	<p>Comprehensive EOC services (1 – 6) all of those included in basic EOC</p> <ol style="list-style-type: none"> 7. perform surgery (caesarean section) 8. perform blood transfusion
<p>A basic EOC facility is one that is performing all of the 1-6 A comprehensive EOC is one that is performing al of functions 1-8</p>	

Source: Maine D. Guidelines for monitoring the availability and use of obstetric services 1997 New York:UNICEF

Annex 3

Indicators and minimum acceptable levels	
Indicator	Minimum Acceptable Level
Amount of essential obstetric care (EOC)	For every 500,000 population, there should be at least 5 emergency obstetric care facilities with at least one offering comprehensive care*
Geographical distribution of EOC facilities	Minimum level for amount of EOC services is met in sub-national areas
Proportion of all births in basic and comprehensive EOC facilities	At least 15% of all births in the population take place in either basic or comprehensive EOC
Met need for EOC: Proportion of women estimated to have complications who are treated in EOC facilities	At least 100% of women estimated to have obstetric complications are treated in EOC facilities
Caesarean sections as a percentage of all births	As a proportion of all births in the population, caesarean section account for not less than 5% nor more than 15%
Case fatality rate	the case fatality rate among women with obstetric complication in EOC facilities is less than 1%

Source: Maine D. Guidelines for monitoring the availability and use of obstetric services 1997 New York: UNICEF

**revised from the original. National level monitoring of the Achievement of universal access to reproductive health 2007. WHO/UNFPA⁴⁹*