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A RETROSPECTIVE STUDY OF STILL BIRTHS AT THE UNIVERSITY TEACHING HOSPITAL, LUSAKA, ZAMBIA

DR. FRANCIS CHANDA

DISSERTATION SUBMITTED TO THE UNIVERSITY OF ZAMBIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF MEDICINE IN OBSTETRICS AND GYNAECOLOGY

2004

DEDICATION

TO THE EXPECTING MOTHERS WHO ENDURE UNDESERVEDLY UNFAVOURABLE FETAL OUTCOMES PARTLY BECAUSE OF OUR INHERENT LIMITED KNOWLEDGE AND UNDELIBERATE INADEQUATE CARE.

ACKNOWLEDGEMENT

I am so grateful to my supervisor Ms Christine Kaseba Sata, Head of Department of Obstetrics and Gynaecology for her input especially towards the final stage of completing the dissertation.

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Many thanks to Ms Rosemary Willombe and Ms Catherine Mwale, Obstetrics and Gynaecology Department Secretaries for their understanding, patience and countless editing.

Last but not the least I am thankful to all those who encouraged and showed interest

STATEMENT

I HEREBY STATE THAT THIS DISSERTATION IS ENTIRELY THE RESULT OF MY OWN PERSONAL EFFORT. THE VARIOUS SOURCES TO WHICH I AM INDEBTED HAVE BEEN CLEARLY INDICATED IN THE BIBLIOGRAPHY AND ACKNOWLEDGEMENTS.

SIGNED.....

DR. FRANCIS CHANDA

DECLARATION

I HEREBY DECLARE THAT THIS DISSERTATION HEREIN PRESENTED FOR THE DEGREE OF MASTERS OF MEDICINE IN OBSTETRICS AND GYNAECOLOGY HAS NOT BEEN PREVIOUSLY SUBMITTED EITHER WHOLLY OR IN PART FOR ANY OTHER DEGREE AT THIS OR ANY OTHER UNIVERSITY NOR IS IT BEING CURRENTLY SUBMITTED FOR ANY OTHER DEGREE.

SIGNED:.....

DR FRANCIS CHANDA

APPROVED BY: .....

DR. C. M. KASEBA (SUPERVISOR)

APPROVAL

THIS DISSERTATION OF **DR. FRANCIS CHANDA** IS APPROVED AS FULFILLING THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF MEDICINE IN OBSTETRICS AND GYNECOLOGY BY THE UNIVERSITY OF ZAMBIA

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ABSTRACT

Zambia's Perinatal mortality rate (PNMR) ranks amongst the highest in the world and the need to reduce it is well recognized. Just well over 50% of this mortality is attributed to stillbirths and reduction of stillbirth would inevitably lead to a decrease in Perinatal Mortality (PNM).

Despite huge deliveries at UTH of 10000 annually, reviews of stillbirth are lacking.

This was a descriptive retrospective study of stillbirths that occurred at UTH during a one year period from May 2001 to April 2002 and it aimed to establish the pattern of stillbirths and identify areas that could be useful in reducing this high PNM.

The incidence of stillbirth at the institution was 49/1000 during the studied period and the general pattern and picture of stillbirth was opposite that found in the developed nations. First pregnancies, grandmultiparity, adolescent pregnancies, haemorrhage, hypertensive disorders and intrapartum care were areas that could be useful in preventing and reducing PNM at UTH.

In addition, Low socio-economic status and poverty were seen as underlying factors. In general terms reducing the rate of adolescent pregnancies and improving the quality of obstetric care both at the referral clinics and UTH were recommended.

Prospective studies aimed at indentifying specific causes of poor obstetric care and those including the referral clinics would even be more helpful in reducing PNM.

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LIST OF ABRREVIATIONS

FSB	-	Fresh Stillbirth
G.A.	-	Gestational age
HIV	-	Human Immunodeficiency Virus
Kg	-	Kilogram
MM	-	Maternal Mortality
MSB	-	Macerated stillbirths
MTCT	-	Maternal to Child Transmission
PMTCT	-	Prevention of Maternal to Child Transmission
PNM	-	Perinatal Mortality
PROM	-	Pre-mature Rupture of Membranes
RPR	-	Rapid Plasma Reagin
UTH	-	University Teaching Hospital
VCT	-	Voluntary Counselling Test
WHO	-	World Health Organisation

INTRODUCTION

Perinatal Mortality (PNM) comprises stillbirth and first week neonatal deaths (1,2,4). The estimated annual total of Perinatal deaths worldwide is 7.6 million with 98% of these deaths taking place in developing countries (4,6).

The Perinatal Mortality rate (PNMR) is calculated as the number of these deaths per 1000 live and stillbirths (3,4) and is widely held as a sensitive index of level of obstetrics and neonatal care and socioeconomic status (1,2,3,4). In developing countries PNMR stands at 35 to 111 per 1000 births as opposed to less than 10 in developed nations(5,7,8) In Zambia the PNMR has been estimated to be between 60 and 79 per 1000 births (8).

Stillbirths

Stillbirths defined as babies born dead at gestational ages more than 22 weeks or with weights more than 500grams are a major contributor to PNM in many nations accounting for up to 60% worldwide (4). In Zambia a stillbirth is legally considered to be a baby born dead at 28 weeks of gestation at least or with a weight of 1000grams or more. WHO currently recommends the latter (28 weeks G.A and Births weight or 100grams or more) for the purpose of standardizing and comparing PNM statistics worldwide (14).

Effects of stillbirths

Documentation of the psychological effects of stillbirths is abundant (9,10,11,12,13). Normal acute reactions involving bereavement are seen and these last a variable and appreciable time just like in the loss of an adult. In some instances grief and bereavement becomes pathological needing long term psychiatric treatment. Infact investigations have reported that 20 – 30% of women with PNM have appreciable longterm psychiatric morbidity. Even those that seem to recover from the experience testify to life long lasting mental marks and memories of stillbirth whilst others avoid and give up further pregnancies altogether (9,10,11,12,13). Supportive care in so many forms extending beyond delivery is well established in Developed nations.

In Developing countries literature or information on psychological effects of stillbirth is scanty. But it is known that stillbirth together with neonatal deaths contribute significantly to a high infant mortality which in turns influences high fertility rates now averaging at 5 –6 births per woman in the Africa region (5). Mothers who experience stillbirths, neonatal and infant mortalities become pregnant almost immediately again to replace the lost and are likely to experience the same (4). A part from socioeconomic factors cultural reasons contribute to this vicious cycle (4,6). Evidence exists to show that previous still birth is a risk factor to repeat stillbirth, abortions, Ectopics and other adverse outcomes(4,5,6).

Reduction of PNM

The need to reduce PNM is well recognized and measures to do so have been established. In Developed countries these measures are worked out from classifications of PNM based on specific clinical causes. Clinicopathological causes are an example. It is now held that efforts to reduce PNM in developing nations are better based on ways other than those in developed countries. For example a classification of stillbirths using Birth weight and birth setting is one simple way on which measures can be based other than using the clinicopathological one (4). Population based studies in South Asia and the Phillipines suggest that approximately 20 – 25 percent of Perinatal deaths are associated with causes known to threaten survival of women during pregnancy or delivery, another 20 percent are due to management practices at delivery and more than one-third are due to womens health and nutritional status (6,13). Programs aimed at improving womens health and nutritional status and at managing obstetric complications and providing appropriate care of the newborn could reduce this enormous death toll (6). Adopted interventions for reducing maternal mortality are evident of this association. Essential obstetric care prescribed in safe motherhood a component of reproductive health consist among others management of problems of pregnancy, monitoring labour using partograms, surgery and immediate neonatal care with the aim inclusive of improving Perinatal outcome (5). Historical experience has provided evidence of success of such approach (6).

Even though PNMR is closely associated to maternal mortality (MM) lessons learnt in several European countries and the United States reveal that with the advent of improved

health care PNM and Infant Mortality declined dramatically when Maternal Mortality had remained constant (6).

Stillbirth accounts for more than 50% of PNM worldwide and in the developing countries most causes are avoidable. In Lusaka Zambia, 10000 of annual deliveries are conducted at the University Teaching Hospital (UTH). Despite this gigantic number of deliveries reviews of stillbirth are Lacking.

This study aims to determine the pattern of stillbirth at UTH based on the frequency of socioeconomic, biologic, medical and obstetric factors and hopes to identify areas that can be useful in efforts of reducing Perinatal Mortality.

STATEMENT OF THE PROBLEM

Zambia's Perinatal mortality rate is amongst the highest in the world and stillbirth contributes significantly to this.

Stillbirth is an undesirable outcome of pregnancy which is associated with individual maternal complications both physical and psychological in the short and long term. In developing countries like Zambia is influences high fertility rates that are consequently linked to high neonatal infant mortalities and further stillbirths.

At the University Teaching hospital despite a huge number of deliveries of about 10,000 annually (Approximately 15 - 20% of deliveries in Lusaka Urban District) reviews and formal audits of stillbirths are so lacking.

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Stillbirth is an undersirable outcome of pregnancy which is associated with individual maternal complications both physical an psychological in the short and long term. In developing countries like Zambia it influences high fertility rates that are consequently linked to high neonatal infant mortalities and further stillbirths. It forms part of this vicious cycle.

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STUDY JUSTIFICATION

Peri natal mortality rate is high in Zambia and the need to reduce it is clear.

Western world countries have reached all time lower rates of PNM mainly due to improved standards of living and advancements in their health care. Existing measures for PNM prevention in these countries are usually based on classifications such as clinicopathological causes.

Developing countries are besieged by many challenges in their health care delivery systems and PNM preventive measures as found in developed countries may not just be applicable and workable given the difficulties and level of development.

The challenge is to find PNM preventive measures that are amenable to developing countries.

A study such as this may prove essential in identifying areas that could be used in achieving significant PNM reduction.

LITERATURE REVIEW

The need for reducing the high Perinatal mortality rates in developing countries is very obvious and if measurers are to be effective they must be based on results of surveys and Perinatal audits with classifications used that do not rely on clinical causes only (4).

Socioeconomic, demographic, biologic, medical and obstetric factors can be examined generally or specifically for possible areas that may be useful in preventive measures. These would include among others;

- Maternal age
- Parity
- Ante-natal attendance
- Birth weight
- Birth setting
- Time of Fetal death (in relation to health institution)
- HIV and Syphilis associations
- Obstetric and other medical complications.

Maternal Age

Generally the ages less than 20 and above 35 are associated with increased adverse pregnancy outcome (4,6,5,16). There are approximately 1, 700 million young people in the world, 86% of whom live in developing countries. About 16% of those living in these countries are in Africa. In some countries of the region 25% to 27% of first births

occur among adolescent and there is evidence that PNM is higher in this group compared to those of older ages (4,6)

The orthodox view is that childbearing is safest in the age group 20 – 29years and risks rise over 35 years of age. However living conditions are now thought to have confounding effects.

Parity

Nulliparous (Parity = 0) women and grandmultiparous (Parity > 5) are also associated with increased PNM with the second to fifth birth thought to be safer. Poverty, illiteracy and lack of proper ante-natal care influence the effect of parity on pregnancy outcome (4,6,18).

Ante-Natal Attendance

It is unanimously agreed that ante-natal care makes a significant contribution to maternal and Perinatal health (6). The world Health Organisation (WHO) recommends a minimum of 4 ate-natal visits to be adequate but this does not imply that countries with more than the minimum visits should reduce (19) .

More recently ate-natal attendance has been looked at as an output indicator (useful in indicating utilization of ante-natal service) with a week link to pregnance outcome. The content and quality of ante-natal care is a more important determinant of outcome. Individualized care and delivery plan is encouraged for each particular woman (20).

Birth Setting

Births taking place at home are inevitably associated with higher adverse pregnancy outcome compared to births in health institutions (4).

However in developed countries e.g. Sweden, where home deliveries are prevalent this is not so. Lessons Learnt indicate that the crucial factor even in home deliveries is the presence of skilled personnel at birth (6).

Time of Fetal Death

There are two chief caterogories with respect to time of fetal death namely pre-labour and intrapartum fetal death. Pre-labour fetal deaths are mostly macerated and intrapartum, fresh stillbirth respectively with the exception in very few.

The majority of stillbirth seems to occur before initiation of labour and mostly before attendance at health institution and the implication of this is that this is a difficult group to analyse and identify contributing factors that are avoidable (4).

Intrapartum fetal deaths are usually associated with abnormal labour and specific avoidable causes are easily identified in audit exercises. Therefore empirically it is more often possible to influence intrapartum fetal death than pre-labour death (4).

Syphilis

Maternal Syphilis is considered to be an important cause of Perinatal morbidity and mortality in Sub-Saharan Africa. It has been associated with adverse pregnancy outcome namely stillbirth, miscarriage, low birth weight, intra uterine growth retardation, Preterm birth and congenital syphilis (21).

In Zambia one study attributed 42% of stillbirths and 19% of spontaneous abortions after 20 weeks to maternal syphilis (22). Twenty one percent of Perinatal deaths in Malawi were due to syphilis (23). In Tanzania, Mwanza region 49% of women with high titer active syphilis and positive Treponema Haemagutination Test or Fluorescent Agglutination confirmatory tests experienced an adverse outcome compared to 11% of seronegative women (23).

Seropositivity to syphilis and unknown syphilis status in pregnancy is highly associated with adverse outcome whereas treated syphilis reduces the incidence of adverse pregnancy outcome (24).

Screening and treatment of maternal infection is highly in use during pre natal care in Sub Saharan Africa. In Zambia a single intramuscular dose of 2.4 mega units of Benzathine penicillin (as recommended by W.H.O.) has been adopted and is currently in use. One dose treatment has been found to be cost effective compared to multiple doses. A study done recently in Tanzania confirmed the effectiveness of single dose treatment in preventing adverse pregnancy outcome associated with maternal syphilis (25). Failure of

protection of syphilis treatment from adverse outcome has been attributed to re infection, inadequate treatment and gestational age at treatment (25,26,27). Risk of transmission is greater if treatment is given in the last trimester compared to first trimester (28,29). From the foregoing, screening and treatment in first or early second trimester with repeat screening test would appear to be the best ways to reduce morbidity and mortality associated with syphilis.

It would be unfair to have a high rate of stillbirths secondary to syphilis in any population in the world today because screening and treatment programmes are very cost-effective.

Human Immunodeficiency Virus (HIV) Infection

HIV contributes significantly to adverse pregnancy outcome in one way or another and the rate of increase of new infections is alarming (4,30). As of now between 34 and 46 million people are infected worldwide and 25 – 28.2 million of these (two thirds) are in Sub-Saharan Africa. The world experiences 5 million of new HIV infections per year and 755 occur in Africa (4,6)

By the year 2002, for the first time in history the number of women with HIV infection equaled that of men and half of these were between 15 and 24 years of age (31). Now that most HIV infected are women and of childbearing this will have profound implications on the numbers of adverse outcome in pregnancy.

Maternal to child transmission (MTCT) rates of HIV ranges from 13% in Europe to 40% in Africa and 10% of these transmissions occurs ante partum (but 30% when brest feeding is not considered) (31).

In Zambia the prevalence of HIV positive women stands at 20% and 39% of these will transmit the virus to babies a good percent (10%) of which occur ante-partum and is currently contributory to stillbirths (32). HIV has been isolated in various organs of stillbirths causing pathology directory linking it to cause of death. High rates of stillbirth occur in advanced HIV linked with very low immunity (Low CD_4 Counts) compared to other stages of infection (4,6).

Prevention of maternal to child transmission (PMTCT) programmes have been adopted in some districts in Zambia including Lusaka and the effectively and impact on Perinatal and infant mortalities remain to be seen.

Obstetric complication

Obstetrics complication like abruptio, placenta praevia , multiple pregnancy obstructed and prolonged labours, Malpresentation together with medical complications such as hypertension (Pre-eclcampsia) diabetes, anaemia and malaria are all associated with stillbirth (6,16).

And the presence of certain socioeconomic, biologic and past bad obstetric factors are known to increase chances of obstetric complications but the absence of these risk factors

does not guarantee 100% Safety through pregnancy because Upto 50% of adverse outcome in pregnancy are unpredictable (6,20).

Establishing the pattern of stillbirth based on the above factors and determining to what extent (the scope) the se factors are frequent could highlight areas that can be useful in efforts to reduce Perinatal mortality.

RESEARCH QUESTIONS

1. What is the pattern of stillbirth at UTH using the frequency distribution of socioeconomic, demographic, biologic, medical and obstetric complication.
2. What factors can be useful in the reducting of PNM at the institution.

OBJECTIVES

Broad : The general objective of the study was to review and establish the pattern stillbirths at UTH

Specific: Specifically the study aimed to:-

1. determine the respective incidences of the overall, fresh and macerated stillbirth.
2. examine the socio-demagraphic, obstetric, medical and intrapartum factors surrounding stillbirths
3. establish the distribution frequency of HIV and syphilis amongst stillbirths respectively
4. identify areas that could be useful in efforts aimed at prevention and reduction of PNM at UTH

RESEARCH METHODOLOGY

STUDY DESIGN

This was a descriptive retrospective case record study that investigated a population of stillbirths at the U.T.H. maternity occurring during a one year period from May 2001 to April 2002.

The inclusion criteria was all stillbirths with :-

i). A gestational age of 28 weeks and above.

ii). Birth weight of 1000grams and above

iii). A record of delivery between 2001 and April 2002.

The exclusion criteria was none.

Sample size and Selection

All stillbirths satisfying the above criteria were examined.

Methods

Obstetric records were examined and scrutinized for socioeconomic, demographic, medical and obstetric factors respectively and these were entered accordingly on structured data collecting instruments.

Analysis

All collected data was entered into a computer and EPI-INFO software used to facilitate analysis and representation of results.

Quality Control

1. A pilot study was conducted one week prior to commencement of the study to test data collection tools and necessary restructuring was done.
2. Research assistants were trained on how to enter data from records onto the data collecting sheets and were constantly supervised by the investigator during the study.
3. Every 2nd day data was checked for completeness by the investigator before entry by data entry technicians.

Ethical Consideration

Permission to conduct this study was obtained from UNZA research and ethical Committee, the Head of Obstetrics and Gynaecology Department UTH and the Health Information Systems Manager at UTH.

Study Limitations

Limitations anticipated are those inherent in a Retrospective case record study namely the missing or inadequacy of recorded data. Detailed and careful scrutiny was employed to try and overcome this limitation.

Dissemination of Results

Results obtained from this study were planned to be presented to the Department of Obstetrics and Gynaecology at UTH at an appropriate forum. Results would also be

made available to the Lusaka Urban District health Management Team that administers the referral clinics. It was hoped that information from this study would be helpful in creating an awareness of factors contributing to a high Perinatal morbidity and mortality at the institution and hence help in ways of improving prevention of PNM.

RESULTS

Incidence

During the one year period under study from May 2001 to April 2002 there was 394 stillbirths altogether, satisfying criteria against a total of 8,084 live and stillbirths. This gave an incidence of 49 per 1000 at UTH.The incidences for FSB and MSB were 22 and 27 per 1000 births accounting for 46% and 54% respectively.

Fig1. Proportions of FSB and MSB at UTH May 2001 – April 2002(n = 394)

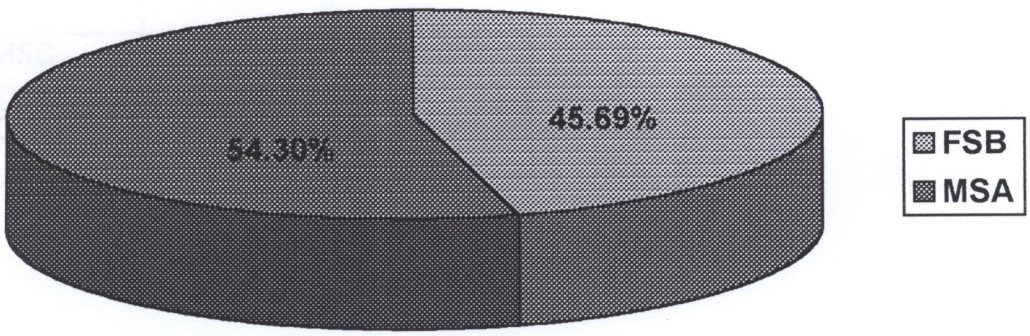


Table 1 Incidences of stillbirths (overall, FSB and MSB) at UTH, May 2001 – April2002 (n = 394)

Stillbirths	Frequency	Percent %	Incidence (Per 000)
FSB	180	45.69	22
MSB	214	54.31	27
TOTALS	394	100	49

59.4% were male and 40.6% female. Anomalies were found in 15%of stillbirths.

Available data

The above information on incidence was obtained from the registry book in labour ward and when individual case files were sought from the records room only 84% of files, that is 331 out of a total possible 394 were retrieved. The rest were missing. 45.92% of the retrieved were FSB files and 54.08% MSB.

Table 2 Frequency of FSB and MSB at UTH in available files of stillbirth, May 2001 – April 2002 (n =331)

Stillbirth	Frequency	Percent
FSB	152	45.92
MSB	179	54.08
TOTAL	331	100:00

Socio-demographic factors

Over 98% of women with stillbirths were from either high or medium density residential areas and less than 2% from low density areas.

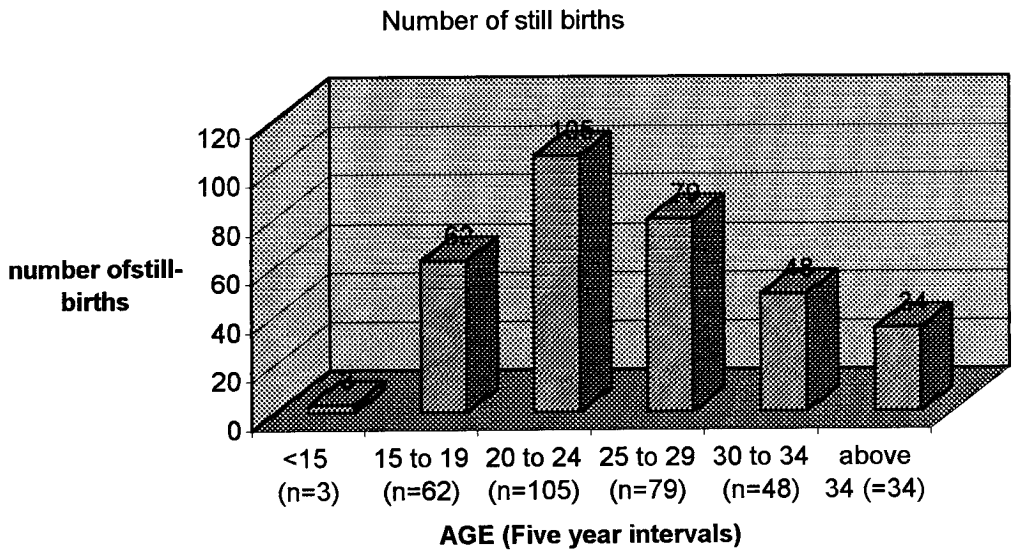
The majority of women 49.6% (164) were reportedly married and 26.2% (87) single whilst 24.2% (80) had no indication of their marital status in the records.

The youngest mother to have a stillbirth was 13 years and the oldest 49 years old respectively. Most stillbirths , 31.72%(105) occurred in the age group 20-24 and the least 0.9% (3) below age 15. 10.27%(34) of cases were found in those aged 35 and above.

Table 3 Age distribution of all stillbirths at UTH May 2001 – April 2002 (n = 33)

Age	Frequency	Percent
<15	3	0.91
15 – 19	62	18.73
20 – 24	105	31.72
25 – 29	79	23.87
30 – 34	48	14.50
>35	34	10.27
TOTAL	331	100

Figure 2 Age distribution of all stillbirths at UTH May 2001 – April 2002

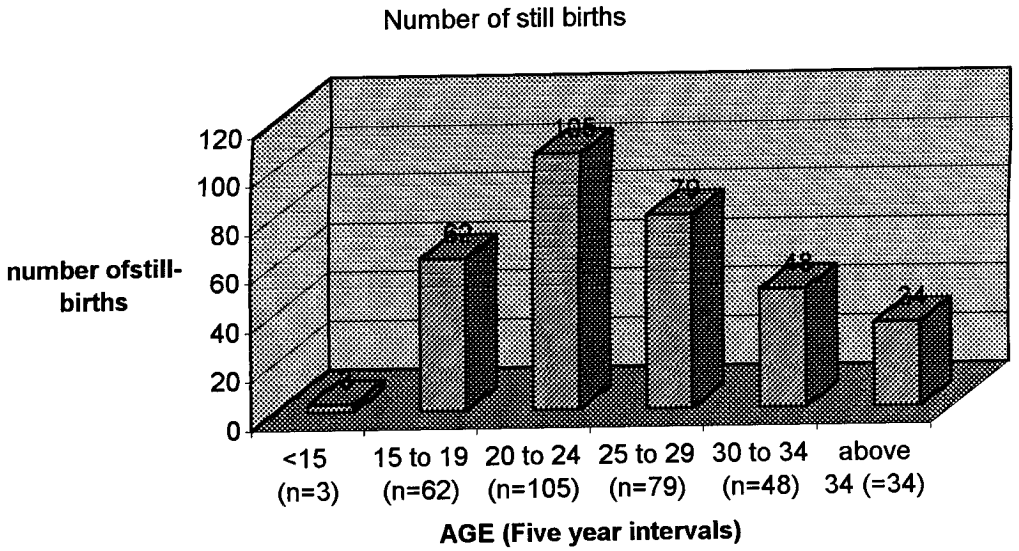


Adolescent pregnancies (<20) accounted for 20% of stillbirths, whilst the age group 20 – 34 for 70% and above 34 years 10.27%.

Table 4 Age distribution of stillbirth according to <20, 20 –34, >35 at UTH May 2001 – April 2002 (n = 33

Gravidity	Frequency	Percent
1	109	32.93
2	67	20.24
3	49	14.80
4	30	9.06
>5	71	21.45
Unknown	5	1.51
TOTAL	331	100

Figure 2 Age distribution of all stillbirths at UTH May 2001 – April 2002



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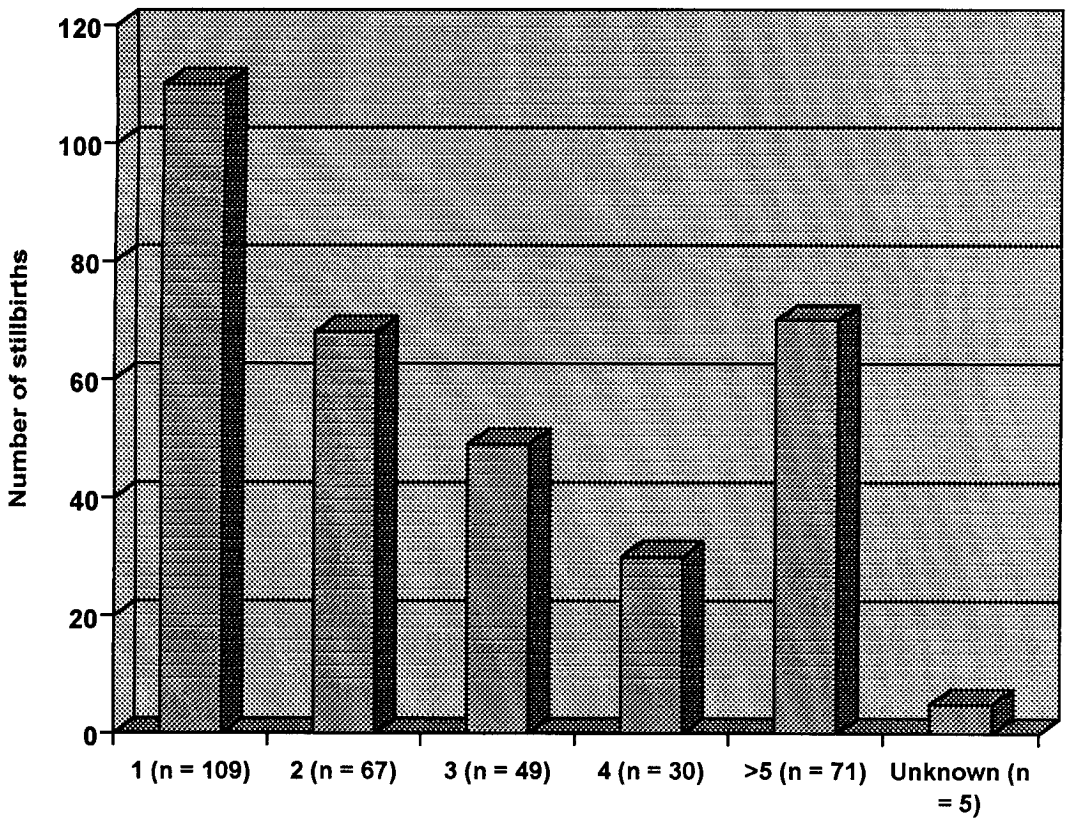
4	30	9.06
>5	71	21.45
Unknown	5	1.51
TOTAL	331	100

First pregnancy was associated with the highest percent,32.93% of stillbirths and in second place was gravidity of 5 and above with 21.45%. 15%(5) had no gravidity indicated.

Further scrutiny showed that first births and gravidity of 5 and above accounted for 55% of stillbirths together i.e. 55% of stillbirths occurred in first births and Gravidity of 5 and above.

Fig 3 Gravity distribution in all stillbirths at UTH May 2001 – April 2002 (n=331)



The frequency of ante-natal visits was most between 2 and 6 times. Unknown accounted for the largest at 25.99%.

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Table 5 Distribution of number of antenatal visits in stillbirths at UTH May 2001-April 2002(n=331)

Ante – natal visit	Frequency	Percent
1	19	5.74
2	43	12.99
3	42	12.69
4	42	12.69
5	34	10.27
6	28	8.46
7	37	4.23
8	86	6.94
Unknown	86	25.99
TOTAL	331	100

Past obstetric factors

Past obstetric history of pre-term delivery was found in 15%,previous stillbirths in 23%,abortions in 18% and neonatal deaths in 16% of stillbirths respectively.

Medical and Obstetric Complications

Medical and Obstetric complication were found in 22.66% of stillbirths and the majority

were due to haemorrhage (Abruption and placenta praevia) accounting for 30.67% of complicated cases.

Table 6 Distribution of medical and obstetric complications in stillbirth at UTH, May 2001 - 2002

Complications	Frequency	Percent
Hypertensive disorders	12	3.63
Abruption	12	3.63
Placenta Praevia	8	2.43
Chorioamnionits	4	1.21
Cord accidents	5	1.51
PROM	6	1.81
Ruptured Uterine	3	1.0
Others	25	7.55
Not identifiable	256	77.33
TOTAL	331	100

HIV

Almost 80% (264) of stillbirths records had no evidence of VCT nor HIV tests conducted and only 20% (67) received counseling.

Table 7 Distribution of Voluntary Counselling Testing (VCT) in stillbirths at UTH, May 2001 – April 2002 (n = 331)

VCT	Frequency	Percent
Done	67	20.24
Not done	264	79.76
TOTAL	331	100

34.33% (23) of those that received counselling accepted testing and 44% of these were reactive.

Table 8 Distribution of Results of VCT in stillbirths offered counselling at UTH, May 2001 –April 2002 (n = 67)

VCT		Frequency	Percent
Refused		44	65.67
Accepted	Negative	13	19.41
	Positive	10	14.92
TOTAL		67	100.00

Syphilis

Syphilis testing was done in 49.24% (163) of stillbirths whilst 50.76% (168) were not offered the test apparently.

Table 9 Distribution of Syphilis testing by RPR in stillbirths at UTH May 2001 – April 2002 (n = 331)

RPR Test	Frequency	Percent
Not done	168	50.76
Done	168	45.24
TOTAL	331	100

Amongst the offered 9.8% (16 out of 163) tested positive and the rest 90.18% negative. All but 3 (i.e. 1% of stillbirths) received treatment.

Table 10 Distribution of +Syphilis testing (by RPR) results in stillbirths at UTH May 2001 – April 2002 (n = 331)

RPR Test	Frequency	Percent
Results		
Negative	147	90.18
Positive	16	9.82
TOTAL	163	100

Intra-partum Factors

Approximately 79% of stillbirths had occurred before arrival at any health institution (UTH or Clinic) and 21.45% had live babies on arrival.

Table 11 Place of fetal death (before or after arrival at health institution) in Still births at UTH May 2001 – April 2002 (n = 331)

Fetal heart on arrival	Frequency	Percent
Absent	260	78.55
Present	71	21.45
TOTAL	331	100

The lowest birth weight was 1.oKg and the highest 4.2Kg. Most stillbirths (22%) occurred in the weight group of 1.5 – 1.9Kg. No record of weight was observed in 6% of stillbirths.

Table 12 Weight distribution in stillbirths at UTH, May 2001 – April 2002 (n = 331)

Weight (Kg)	Frequency	Percent
1 – 1.4	61	18.43
1.5 – 1.9	73	22.05
2.0 – 2.4	68	20.54
2.5 – 29	55	16.62
> 30	53	16.01
Unknown	21	6.34
TOTAL	331	100

When the weight distribution was contracted into 2 categories of less than 2.0kg and above 53.17% of stillbirth occurred in the latter group.

Table 13 Weight distribution (< 2.0Kg and >2.0Kg) of stillbirths at UTH May 2001 – April 2002 (n = 331)

Weight (Kg)	Frequency	Percent
<2.0	133	40.48
>2.0	176	53.17
Unknown	21	6.34
TOTAL	331	100

Almost 22% of stillbirths were alive at the time of arrival at health institution and 70% of these weighed of these weighed at least 2.0Kg. In other words the 2.0Kg and above group with fetal heart present on arrival represented 15% of all stillbirths.

Table 14 Distribution by percentage of stillbirth occurring before and after arrival at health institution and weight of <2.0Kg or>20Kg at UTH

May 2001 – April 2002 (n = 331)

Weight	<2.0Kg	>2.0Kg	Unknown	Totals
Place of fetal death				
Before arrival	36.25	38.36	3.93	78.55
After arrival	4.22	14.81	2.42	21.45
TOTAL	40.47	53.17	6.35	10.00

Within the group that arrived alive at health institution 72% went into Labour spontaneously, whilst 28% were induced for various reasons. Furthermore 83% of these delivered vaginally and 17% by Caesarean section.

DISCUSSION

Incidence

The incidence of stillbirth at UTH during the one year study period (may 2001 to April 2002) was 49 per 1000 live and stillbirths. This is far much higher when compared to the rates for developed nations (e.g. 7.7/1000 for the United States) but similar to other developing nations.

However, this is a hospital based rate .When the entire Lusaka urban district is taken into consideration,given that all stillbirths are supposed to be referred to UTH and about 40-50 000 annual deliveries occur in the referring clinics ,the crude stillbirth rate for Lusaka urban drops to approximately 10 /1000 total births. This is comparable to the rates in developed nations but if same criteria for the numerator (ie gestational age of 24 weeks) is used the rate for Lusaka would definitely increase.

Generally it has been observed that stillbirth constitute 50 –60% of PNM therefore arguably the PNMR at UTH would be in the range 81 – 98 per 1000 births. This falls within the range for developing nations considered to be 35 –111/1000births but it is above that for Zambia (i.e. 60 – 79/1000) and the latter is also explained by the fact that this was a referral hospital based study.

Fresh and Macerated stillbirths (FSB and MSB) were almost equally distributed. Again this is in contrast with the picture in developed nations. MSB cases out number FSB ones significantly and this can be attributed to better antepartum and intra partum care. It is also interesting to note that the missing files did not seem to affect the proportions of FSB and MSB in the available study population (see table 2)

There were more male than female stillbirths in the ratio of 3 to 2.This is in consistency with the old observation that more male than female babies are born the male ones succumb more to mortality.

Anomalies were found in 5% of stillbirths. This is low compared to anomaly rates in stillbirths abroad.

Socio-demographic factors

An overwhelming majority of stillbirths, about 98% came from high or medium densely populated areas .A strong association exists between such areas and low socio-economic status and hence poverty. In Zambia this is no surprise as more than 70% of the population live below the poverty datum line.

There were more married women (at least 50%) than any other marital status .unfortunately the status of 33.2% could not be determined but singles accounted for a

minimum of 26.2% of cases. Being single coupled with low socio-economic status has been found to be significantly associated with adverse pregnancy out come.

Adolescents contributed to almost 20% of stillbirths and women aged 34 and above , 10.27%. Even though the majority of stillbirths occurred in the 20 – 34 (70%) age group this is explained by the observation that the majority of pregnancies also occur in this age group (6). Infact studies done at UTH before have shown that there is no significant statistical differences in stillbirth as an outcome when adolescent are compared to older age groups (16). In other words stillbirth rates in adolescent and older ages are similar. It is ironical that 20% of all pregnancies occur in adolescents and 20% of stillbirths occur in Adolescent pregnancies. However 20% is a huge figure and it makes sense to target PNM reduction efforts at adolescents mainly by postponing their pregnancies (besides this has other benefits e.g. attaining an education) and by improving their care when pregnancy occurs.

Stillbirths were commoner (32.93%) in first pregnancies than any other gravidity. When grandmultiparas are considered together with first births, they accounted for 54.38% of stillbirths. This pattern is in conformity with the observed notion elsewhere that first births and grand multiparity are associated with increased PNM compared to second, third and fourth pregnancies (4,6,16).

This identifies first births and grandmultiparity as areas that can be targets for reducing high PNMR.

Most stillbirths occurred in the group of antenatal attendances of 2 – 6 times (57.1%). The group of 8 and above times was associated with 3.0% of stillbirths. The unknown group was 25.99% and this masked a true reflection of the distribution of frequencies and therefore hid the frequency of non- attendance at all of antenatal care which this study could not determine. Studies and surveys before have shown that over 90% of ante-natal mothers in Zambia attend ante-natal care at least once (32).

From the scrutiny of some obstetric case files it was seen that the reason for this 25.99% was mostly due to missing data caused by an omission of records of antenatal attendances during transfer of information by clerks from an ante-natal record card to the newly introduced ante-natal record books at the time of admission to UTH.

However , more recent studies have shown that quality rather than the number of visits is more beneficial. WHO now recommends 4 ante-natal visits to be adequate through the promotion of focused ante-natal care.

From the fore going results on socio-demographic results it appears that low socio-economic status with underlying poverty, adolescent pregnancies, first pregnancies together with grandmultiparity are potential areas for PNM reduction efforts.

Past Obstetrics history

Bad obstetric history involving previous history of pre-term delivery ,stillbirth, abortion and neonatal deaths was associated with stillbirth. The significance of this association was not statistically proven. To determine such a link one would need to carry out a study looking at stillbirths as an outcome, comparing the occurrence of these factors in both live and stillbirths.

How ever what seems significant is that 60% of still births had no such prior history and therefore one cannot so much depend on these factors to reduce the still birth rate. But its also interesting to note that if primigravidas who do not have such previous history are removed this percentage falls.

Medical and obstetric factors

This study revealed that 22% of stillbirth is associated with medical and obstetric complications and this is in conformity with what has been observed elsewhere that 20% of Peri-natal mortality are associated with causes known to threaten survival of women (13).

Haemorrhage and hypertensive disorders conditions amongst the highest ranked causes of maternal mortality in Africa (4,32) were found to be the most frequent medical/obstetric conditions (30% and 16% respectively) associated with stillbirths at U.T.H.

HIV and Syphilis

That 80% of stillbirth had no record or evidence of Voluntary Counselling test (VCT) in pregnancy can be explained with respect to time of study conduct. During the years 2001 and 2002 the National Programme of Prevention of Maternal to Child transmission (PMTCT) was yet in its infancy and still undergoing integration into existing obstetric services (32).

However 44% of women who accepted to be tested were positive and this is about twice the prevalence rate of HIV infection in pregnancy in Zambia (32).

A fairer comparison could have been made if testing was more widespread then.

It is disheartening to see that 50% of stillbirths bore no evidence of RPR testing. This could be close to reality because from sheer observations a good number of mothers referred to UTH are not offered RPR testing from their respective clinics.

However it is encouraging to note that 90% of the 50% of stillbirths that were offered RPR, tested negative and the prevalence of positivity was 10%. 19% of those that tested positive did not receive treatment. No excuse can be entertained for not treating syphilis in pregnancy because of its good cost-effectiveness

Intrapartum factors

In, 78.55% of stillbirths, death occurred in utero before arrival at the hospital or clinic whereas 71 (21.4%) arrived with fetal heart present. Within the group that arrived alive 72% went into spontaneous labour whilst 28% were induced for various reasons. .Furthermore 83%of these delivered vaginally and 17% by caesarian section. It is alarming to have 71 babies die after arriving alive and the cause basically being poor intrapartum care. This group represents avoidable deaths that can be averted through improved intrapartum obstetric care (4).

In Developed countries like the United States over 60% of stillbirths occur below 2.0kg (7). This study shows a reversed pattern at UTH with 43.23% accounting for less than 2.0Kg and 56.77% for 2.0Kg and above.

Unpublished neonatal unit surveys at UTH have shown an approximately 90% neonatal survival rates of babies admitted to the neonatal unit with at least 2.0Kg births weight. This translated into 48% (i.e. 158) of stillbirths that potentially could have been saved when weight alone is considered.

It became more revealing when the above immediately discussed two groups were jointly analysed.

Stillbirths that were alive on arrival at health institution and weighed at least 2Kg represented 15% of all stillbirths. This gives the scope more realistically of stillbirths that are potentially preventable with good intrapartum care. When this good care is extended to the antepartum period the scope enlarges further to 57% of potentially preventable deaths of babies weighing more than 2.0Kg

STUDY LIMITATIONS

This was a retrospective case study and the limitation were basically those that are inherent in such a study namely missing data.

For example:-

- It was not possible to avail all 394 files for stillbirth, only 84% (331) could be located.
- Even in the available files certain specific information on obstetric events were missing or inadequate.

It was therefore not advisable with such missing data to conduct a comparison study such as case – control to determine risk factors associated with stillbirths.

The frequency of other conditions such at, intrauterine growth retardation could not be determined because it was difficult to establish their diagnosis retrospectively. In the same vain effects of level of education, living conditions and nutritional status on stillbirths also could not be determine because these were unattainable in records.

A prospective study would be suitable for such purpose.

CONCLUSION

The pattern of stillbirth at U.T.H. is one of the developing nation characterized by high incidence rates and frequent underlying socioeconomic, medical and obstetric factors. The general picture is opposite that obtaining in developed nations. However, U.T. H. serves as a referral hospital and therefore rates and frequencies are exaggerated and if deliveries from peripheral referring clinics are considered these figures fall dramatically.

This study showed that low socio-economic status with underlying poverty, adolescent pregnancies, first pregnancies and grandmultiparity, intrapartum care, syphilis testing and management of medical and obstetric complications are reasonable areas to target in perintatal mortality reduction at U.T. H.

However it was noted from literature that level of education, nutritional status and quality of antenatal care rather than number of visits are also amongst determinants of good fetal outcome. Further, improving care at peripheral clinics since this is where referrals come from would certainly reduce peri-natal mortality at U.T.H.

Lastly, these identified areas are known also to be risk factors for maternal mortality therefore one can postulate that a good fight against maternal mortality would inevitably reduce PNM.

RECOMMENDATIONS

Based on the findings of this study and in recognizant of already existing efforts by the ministry of health to reduce PNM the following recommendations are made;

1. Harness all efforts that are workable in reducing pregnancy rates in adolescents.
2. Improving obstetric care in referral clinics
3. Improving obstetric care more especially of first births, grandmultiparas, antepartum haemorrhage, hypertensive disorders and labour especially with at least 2.0kg live babies.
4. Increasing RPR testing and treatment of positive cases in the clinics.
5. Further prospective studies to establish determinants of poor obstetric care at UTH, other risk factors associated with stillbirths and effects of confounding factors.

APPENDICIES

DATA COLLECTING INSTRUMENT

FACTORS ASSOCIATED WITH STILLBIRTH AND LOW APGAR SCORES AT UTH

Number order	
File number	

I. Demographic Factors

1. Age_____
2. Parity_____
3. Gravidty_____
4. Marital status
   a. Single
   b. Married
   c. Unknown
5. Residential area
   a. High Density
   b. Medium Density
   c. Lower Density

6. Where was the patient's **first prenatal visit?** (Mark an X in the box)

☐ Lusaka ☐ Outside Lusaka ☐ No prenatal care anywhere (un booked)

If Lusaka, mark an X by the name of the clinic where patients had has *first visit*

Airport	Chipata	Lilayi	Prisons Kamwala
Bauleni	Civic Centre	Makeni	Prisons Chimbokaila
Chainama	George	Mandevu	Railway
Chainda	Kabwata	Matero Main	State Lodge
Chazanga	Kalingalinga	Matero Reference	UTH
Chawama	Kamwala	Mtendere	Other Clinic:
Chelstone	Kanyama	Ngombe	----------
Chilenje	Kaunda Square	Ngwerere	

6. Does the antenatal book have a stamp?

No ☐ Yes,☐ but it not filled out Yes ☐ it is copies below

PCR ...../...../.....	...../...../.....	RMd ...../...../.....
PCR ...../...../.....	NR ...../...../-/....	RBd ...../...../.....
PCA ...../... /.....	I .../...../.....	

II. Past Obstetrics Factors

1. Total Number of Previous total pregnancies _____
   (Abortions, Stillbirths)
2. No. of Term pregnancies (> 37 weeks)_____
3. No. of Pre-term pregnancies (28 - < 37 weeks)_____
4. No. of Neonatal Deaths_____
   (Note: # 1 = #2 + #3 + #4

5. No. of Previous stillbirth_____
   a. at term_____
   b. Preterm_____
6. No. of Previous Abortions_____
7. No, of Neonatal deaths_____
   a. In first weeks_____
   b. After first week_____

III. Maternal Data

1. Date of LNMP___/_____/_____ (Leave Blank if unknown)
2. Date of antenatal Visits_____/____/_____
3. Total No. of Ante-Natal Visit_____
4. Is there a result of RPR/VDRL test in this pregnancy Y N
   a. If "Yes", date of first test ___/_____/____
   b. If "Yes", Result of first test (Circle where necessary)
      i. _____ negative
      ii. _____ positive
      iii. _____unknown/not recorded
   c. If "Positive" any treatment received? Y N
   d. "Yes" date of treatment_____/____/____

IV Pregnancy Complications

1. Pre-eclampsia or gestational hypertension Y N
   a. If "Yes" did patient receive magnesium? Y N
   b. Did patient received antihypetensives Y N
2. Abruptio Y N
3. Placenta Praevia Y N
4. Choriamnionitis
   a. Temp in Labour > 38oC Y N
   b. Fetal tachycardia > 160bpm Y N
   c. Maternal tachcardia> 110bpm Y N
   d. Fundal tenderness Y N

		e.	Foul smelling Fetus	Y	N
		f.	Four smelling amniotic Fluid	Y	N
5	Cord accidents	a.	Cord prolapse	Y	N
		b.	Cord round the neck	Y	N
		c.	Cord Knots	Y	N
6.	PROM	Y	N		
7.	Ruptured Uterus	Y	N		
8	IUFD	Y	N		
9.	Others	_____			

V. Labour and Delivery Data

1. Labour onset
   a. Spontaneous/Induced
   b. If induced
      i. Indication.....
      ii. Method
         a. Cytotec
         b. Oxytocin
         c. Other.....

2. Date of onset/Induction of labour_____/_____/___

3. Time of onset/Induction of labour_____/_____/____

4. If the patient was already in Labour where was her first presentaion? UTH or Outlying Clinic? (Circle)
   a. If UTH
      i. Date____/_____/_____
      ii. Time____/_____/_____
   b. If Outlying Clinic
      i. First presentation
         Date_____/_____/_____
         Time_____/_____/_____
      ii. Decision to transfer patient from clinic to UTH
         Date_____/_____/_____
         Time_____/_____/_____
      iii Arrival at UTH
         Date_____/_____/_____
         Time_____/_____/_____
   c. Was the Fetal heart present on arrival
      i. at the clinic Y N
      ii at UTH Y N

5. Was Partogram Used? Y N
6. Did labour cross the Alert line Y N

a. If "Yes" when Date____/____/____
Time____/____/____

c. If "Yes" at what dilatation?_____cm

7. Any action taken at U.T.H. Y N
If "Yes" (circle)
   a. ARM
   b. Augumentation
   c. Delivery by i. Instrumental
      ii. C/S
   d. None

8. Membrane Rupture (circle where applicable)
   a. Spontaneous_____
   b. Artifical_____
   c. Date:_____/_____/_____
   d. Amniotic Fluid
      i. Clear
      ii. Meconium stained
      iii. Foul smelling
      iv. > 24hours

9. Fetal presentation (circle where applicable
   a. _____Ceph
   b. _____Breech
   c. _____Tripletes

10. No. of Fetuses
    a. _____Singleton
    b. _____Twins
    c. _____ Tripletes

11. Mode of Delivery
    a. Vaginal
       i._____SVD
       ii._____ABD
       iii._____ Instrumental – Vacuum
       - Forceps
    b. C/S _____
       Indication _____

12. Delivery a. Date____/____/____
    Time____/____/____

13. Was it BBA case (Baby born away) Y N

14. Alert time – Delivery time internal _____/_____

VI. **Newborn Data**

1. Sex_____

2. Birth weight_____grams

3. Live/Stillbirth a. If stillborn_____Fresh Y N
_____Macerated Y N

b. If Live i. APGAR Score at 5 mins_____

ii Admission to neonatal intensive Care Unit Y N

4. Any Fetal anomalies Y N

If "Yes" Specify_____

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