# INDIRECT CAUSES OF MATERNAL MORTALITY AT KORLE BU TEACHING HOSPITAL

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## SUMMARY
A total of 439 maternal deaths were recorded at the Korle-Bu Teaching Hospital from January 1995 to December 1999.One hundred and seventy-one (39%) of these deaths were due to indirect causes which are medical conditions complicating pregnancy. Anaemia was the leading medical cause of death and it was responsible for 46 (10.5%) of the deaths. Other important causes of death were sickle cell disease (7.3%), renal disease (4.1%) and diabetes mellitus (3.6%). The multidisciplinary approach in the management of medical conditions complicating pregnancy yields optimum results and there is the need to involve physicians in the management of these cases. Joint clinics in which the obstetrician and the physician see such patients will be ideal.

**Keywords: Maternal mortality, medical conditions in pregnancy, multidisciplinary approach, joint clinics.**

## INTRODUCTION
Globally, some 585,000 women die from pregnancy related causes each year, 99% of them in developing countries[1]. In Ghana out of 100,000 live births 214 women die of complications of pregnancy and childbirth[2].

Maternal deaths are subdivided into direct and indirect obstetric deaths. Direct obstetric deaths result from obstetric complications of pregnancy, labour and the postpartum period and they are usually due to five major causes – haemorrhage, sepsis, eclampsia, obstructed labour and complications of unsafe abortion. It is these conditions that both the lay public and professionals talk about when they discuss maternal deaths. Conferences, workshops and operational research on maternal mortality also concentrate on these conditions. Indirect obstetric deaths result from previously existing diseases or from diseases arising during pregnancy (but without obstetric causes) which were aggravated by the physiological effects of pregnancy e.g. malaria, anaemia, HIV/AIDS and cardiovascular disease. Not much is heard about these during conferences and discussions on maternal mortality. A recent clinical review[3] is silent about indirect causes of maternal deaths in the Sub-Saharan Africa, but states that indirect causes are the second most frequent cause of maternal death world-wide.

The objective of this study was to find out the contribution of indirect causes to maternal mortality at the Korle Bu Teaching Hospital (KBTH).

## MATERIALS AND METHODS
We looked at the Departmental records on maternal deaths that occurred between the period January 1995 and December 1999 and noted the total number of deaths. We also noted the deaths due to indirect causes and the specific medical condition that caused the death.

## RESULT
The results are shown in Tables 1, 2 and 3.

**Table 1** Maternal Deaths: 1995-1999

| Year | 1995 | 1996 | 1997 | 1998 | 1999 | Total |
|---|---|---|---|---|---|---|
| No. of deliveries | 11,754 | 11,593 | 12,273 | 11,611 | 10,851 | 58,082 |
| No. of deaths | 93 | 92 | 88 | 98 | 68 | 439 |

† *Dr. Collison passed away towards the end of 2003. This article is published in his memory and recognition of his contribution to Obstetrics and Gynaecology.*

**Table 2** Indirect causes of maternal deaths 1991-1995

| Year<br>Causes | 1995 | 1996 | 1997 | 1998 | 1999 | Total |
|---|---|---|---|---|---|---|
| Anaemia | 10 | 14 | 12 | 4 | 6 | 46 |
| Sickle cell sickle | 11 | 5 | 7 | 4 | 5 | 32 |
| Renal disease | 3 | 4 | 1 | 4 | 6 | 18 |
| Diabetes | 3 | 3 | 1 | 4 | 5 | 16 |
| Malaria | 1 | 4 | 3 | 5 | 1 | 14 |
| Meningitis | 1 | 4 | 7 | 2 | 0 | 14 |
| Pneumonia | 2 | 2 | 1 | 3 | 2 | 10 |
| Pulmonary embolism | 2 | 2 | 0 | 3 | 3 | 10 |
| Cardiac disease | 1 | 2 | 1 | 0 | 2 | 6 |
| Hepatitis | 1 | 0 | 1 | 0 | 3 | 5 |
| **Total** | **35** | **40** | **34** | **29** | **33** | **171** |

Out of the 439 deaths, indirect causes of death were responsible for 171 cases (39%): Anaemia was the leading medical cause of death. It was responsible for 46 deaths.

## DISCUSSION

Thirty-nine per cent (39%) of the total number of maternal deaths recorded over the period were from indirect causes which are medical conditions complicating pregnancy. This is nearly double, the

**Table 3** Indirect causes in relation to total maternal deaths 1995-1999

| Indirect causes of death | Total no of deaths caused | % of total deaths n=439 | % of deaths from indirect causes n=171 |
|---|---|---|---|
| 1. Anaemia | 46 | 10.5 | 26.9 |
| 2. Sickle cell disease | 32 | 7.3 | 18.7 |
| 3. Renal disease | 18 | 4.1 | 10.5 |
| 4. Diabetes mellitus | 16 | 3.6 | 9.4 |
| 5. Malaria | 14 | 3.2 | 8.2 |
| 6. Meningitis | 14 | 3.2 | 8.2 |
| 7. Pneumonia | 10 | 2.3 | 5.8 |
| 8. Pulmonary embolism | 10 | 2.3 | 5.8 |
| 9. Cardiac disease | 6 | 1.4 | 3.5 |
| 10. Hepatitis | 5 | 1.1 | 3.0 |
| **Total** | **171** | **39.0** | **100.0** |

global estimate of 20% of maternal deaths from indirect causes.[4]

Anaemia was the leading cause of maternal death from indirect causes. Forty-six (10.5%) of the total deaths were caused by anaemia. Sickle cell disease caused 32 (7.3%) deaths. Anaemia may also be a factor in deaths caused by Sickle Cell Disease and malaria as well as in direct obstetric causes like haemorrhage, ectopic pregnancy and unsafe abortion. The woman with genital tract sepsis who is also anaemia does not do well.

Iron deficiency anaemia is the commonest form of anaemia in pregnancy. With improvement in living standards and nutrition, iron supplementation in pregnancy, a tendency for women to have fewer children and increased use of hormonal contraceptives which reduce menstrual blood loss, there should be a decline in the incidence of anaemia in pregnancy.

Renal disease caused 18(4.1%) deaths. The mortalities from renal disease occurred through renal failure. Renal failure may also be a major contributing factor in deaths due to direct obstetric causes like eclampsia and severe haemorrhage as caused by abruptio placentae.

Diabetes mellitus caused 16(3.6%) deaths. These deaths occurred in insulin-dependent diabetics as well as in women who had gestational diabetes. Screening for diabetes must continue throughout pregnancy and the management and assessment of diabetics should start prior to pregnancy with pre-pregnancy counselling as it is with all medical disorders in pregnancy.

Malaria and meningitis each caused 14(3.2%) deaths. This underscores the need for prophylaxis against malaria during pregnancy. In a few cases the diagnosis of meningitis was made at autopsy, such cases having been managed as cases of eclampsia before the death. All who look after pregnant women must realise that eclampsia is not the only cause of collapse in pregnancy. The list of causes is a long one and it includes amniotic fluid embolism, anaphylaxis, asthma, cardiovascular accident, haemorrhage, myocardial infarction tension pneumothorax pulmonary embolism, uterine inversion and cerebral malaria.

Pulmonary embolism and pneumonia each caused 10 (2.3%) deaths. Thrombo-embolism is a leading cause of maternal death in the United Kingdom5 and in the United States6 and in the UK most of the deaths were due to pulmonary embolus rather than cerebral vein thrombosis. Deaths from thrombo-embolism in the UK occurred antepartum occurred in the first trimester. Physicians should think about future pregnancies in a woman who has been identified as having risk factors for thrombo-embolism. Any decisions about thrombo-prophylaxis in such women may be made as part of pre-pregnancy counselling.

There were six deaths (1.4%) from cardiac disease. In developing countries, rheumatic heart disease is the main problem whereas in the developed world women who have had surgery for correction of congenital malformations or surgery from valve replacement prior to pregnancy may be the main problem. A lot of cardiac surgery is being done by the National Cardiothoracic Unit in Korle Bu and there is improvement in knowledge in general of cardiac conditions. The result is that more women with cardiac disease will live to the reproductive age and get pregnant. We shall also be seeing pregnant women who have had surgical correction of congenital malformations in infancy as well as those who have had other forms of cardiac surgery including valve replacements. In Frimpong-Boateng's review[7], 42.4% of the patients that had valve replacement surgery at the Korle Bu Teaching Hospital between 1991 and 2000 were females and the mean age of the patients was 30 years. The obstetrician must be aware of the problems that are likely to be encountered in the management of such patients. One such problem is anticoagulation.

The medical causes of maternal mortality show that obstetricians must pay more attention to and develop skills in the management of medical conditions in pregnancy.

In the developed world the sub-specialty of obstetric medicine has developed because the physiology of the pregnant woman is altered and the constraint of the welfare of the foetus is so important when managing pregnant women, that subspecialists who can oversee the two widely different fields of obstetrics and medicine are needed. Our physicians such as specialists in cardiology, haematology, respiratory diseases as well as the bacteriologist and pharmacologists must be involved in the management of patients with medical conditions in pregnancy. These specialists have sufficient knowledge to deal adequately with all medical conditions in pregnancy.

The multi-disciplinary approach is necessary for the optimal management of medical conditions in pregnancy and if possible there must be joint clinics where obstetricians and physicians work together to manage patients with medical conditions in pregnancy. In the absence of joint clinics, patients with medical conditions in pregnancy should be advised to make alternate visits to the obstetrician and the physician in their clinics.

Pregnancy-related conditions which haunt women from all parts of the world could in many ways be considered a form of terrorism. The unacceptably large number of maternal deaths and the magnitude of morbidity world-wide, in many ways "obstetric terrorism", need to be a subject of drastic policy changes[8].

Obstetric haemorrhage, hypertensive disease, sepsis, complications of unsafe abortion and obstructed labour are the well-known greatest killers during pregnancy and child birth. We have found indirect causes which are medical conditions, a very important contribution to maternal death. In dealing with terrorism all wings of the terrorist must be attacked. Medical conditions in pregnancy must be attacked and attacked effectively by all who look after pregnant women.

## CONCLUSION

Indirect causes or medical conditions are very important as causes of maternal mortality at the Korle Bu Teaching Hospital. Thirty nine percent of the total number of maternal deaths that occurred between January 1995 and December 1999 were due to medical conditions complicating pregnancy. Obstetricians must pay attention to and always involve the physician specialists in the management of such cases.

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