

AUTOPSY AS A TOOL IN THE PREVENTION OF MATERNAL MORTALITY

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ABSTRACT

Maternal mortality rates are an index of the state of a nation's health system. Maternal autopsies help to determine these rates, provide information on avoidable/unavoidable causes of mortality, consequently leading to the development of strategies for treatment and prevention of maternal mortality and morbidity.

The lesson from post-mortem examinations, using the vehicle of confidential enquiries into maternal deaths, can save the lives of many; causing reduction in both maternal and perinatal mortality as well as reductions in morbidity.

However for autopsies to fulfil this role they must be of a very high standard and must be subjected to quality control measures.

Key Words: Autopsy, prevention, maternal mortality.

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INTRODUCTION

An autopsy is a post-mortem examination that basically attempts to determine the cause of death when this is unknown or uncertain; it provides extensive information about disease processes and how they culminate in death; and it also makes available evidence to prosecute medico-legal cases. Aside from these well-known uses of the autopsy, it is also useful for the following:

- Discovery of and research into new diseases;
- Investigating occupational and environmental diseases;
- Assessing result and complication of treatments and technical surgical procedures;
- Determining the accuracy of investigations, particularly imaging techniques.¹

The autopsy advances medical knowledge and when effectively utilized it is an important audit tool as it provides a data base for quality control and quality assurance programmes. According to Mantel et al, 1998: "An effective programme of medical audit will help provide reassurance to doctors, patients and managers that the best quality of service is being achieved, having regard for the resources available"²

The success of autopsies as audit tools depends greatly on the accuracy and completeness of the procedure.

THE IMPORTANCE OF MATERNAL AUTOPSIES

Maternal mortality in Sub-Saharan Africa is on the rise. In many parts of the developing world, it is on the decline and it can be said to be

a rarity in most of the developed world. In Nigeria it is estimated to be 1,000 per 100,000 births; in Singapore 10/100,000 births and in Sweden 7.4/100,000 births^{3,4}. Maternal death rates are an index of the efficiency of a nation's health system. These rates are so low in the developed world that perinatal death rates are now more appropriately used as the measure of an efficient health system. In the developing world where maternal mortality rates are highest, the leading causes of maternal deaths are well known; however, complex disease processes with uncertain pathogenesis can pose a problem for accurate death certification, even in developed countries.

Such cases require thorough post-mortem examinations for the assessment of underlying factors that may have contributed to death. Maternal autopsies are thus required for accurate death certification, determination of underlying causes of death, as well as maternal mortality rates. The lessons learnt from maternal autopsies provide a feedback to clinicians which help to improve clinical practice. Countries with low maternal mortality rates have gone beyond just determining the level of maternal mortality to entrenching systems that critically examine every maternal death, determine the underlying factors and correct substandard practices that contribute to death.⁵ The United Kingdom confidential enquiry into maternal deaths (CEMD) is such a system. Other systems include:

- Facility-based maternal death reviews
- Clinical audit
- Community-based maternal death reviews (Verbal Autopsies)
- Surveys of severe morbidity (near misses)⁶

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All these systems except for the last two utilize accurate post-mortem examinations.

A Safe Motherhood Conference which held in Abuja, Nigeria, in 1990, recommended to government that maternal deaths should be reportable so that through the collection and analysis of appropriate data, the pattern of maternal mortality could be determined and used to establish appropriate interventions. Government accepted the recommendation and issued the necessary directive.⁷ That directive may have led to the institution of regular, maternal mortality reviews in the Lagos University Teaching Hospital (LUTH) and consequently an increase in demands for maternal autopsies at the time.

A retrospective study of maternal deaths at the Lagos University Teaching Hospital (LUTH) between January 1989 and December 1998, found that of 445 maternal deaths which occurred within that period, autopsies were performed on 371, giving an autopsy rate of 83.37%. This was significantly higher than the overall autopsy rate of 35.88% for all deaths registered in the LUTH mortuary during that same period.⁸ All over the world autopsy rates are on the decline, rates below 50% are the norm though specific surveys employing post-mortem examinations may achieve rates of about 80%.^{1,9,10} The high maternal autopsy rates in LUTH puts the institution in an advantageous position to institute reviews of maternal mortality at the facility level and cooperate in or even spearhead confidential enquiries into maternal deaths at the regional/national level.

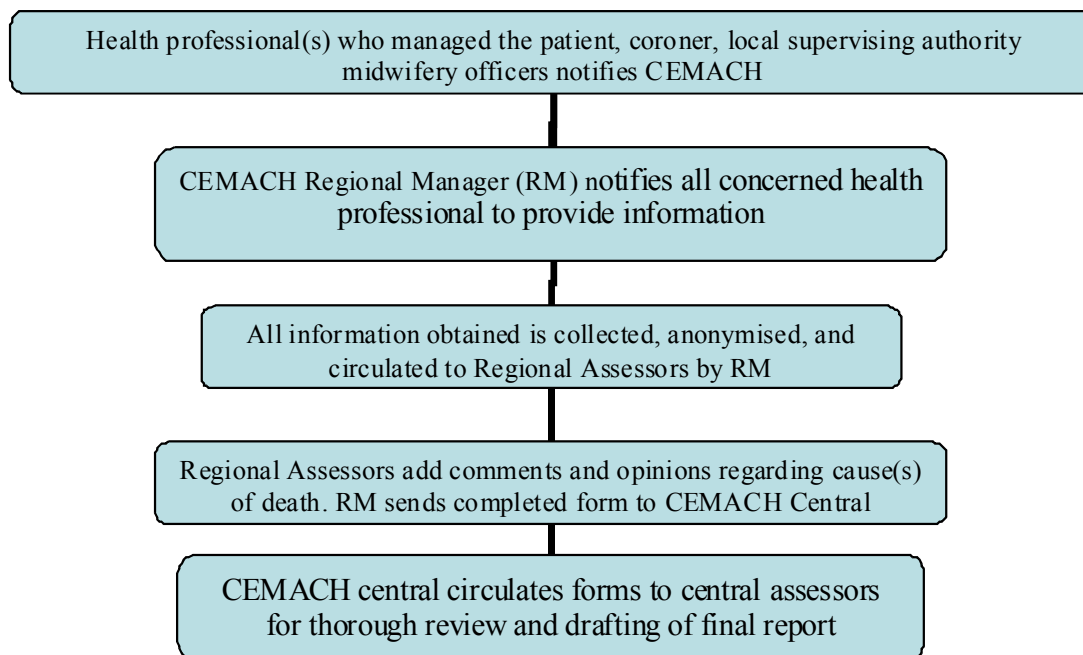
In all countries where such reviews and enquiries take place, improvement in clinical management always follows resulting in plummeting maternal mortality rates.

FEASIBLE METHODS OF INVESTIGATING MATERNAL DEATHS

Confidential Enquiries into Maternal deaths

Confidential enquiries into maternal deaths are done regularly in most of the developed world. In the United Kingdom these enquiries date back to 1928 and their reports have been published at three yearly intervals, beginning with the years 1952-4.¹¹ In every triennium since the publication began, the number of maternal deaths has fallen and the standard of maternal necropsies is rising as each year passes.¹² The aim of such enquiries is simply to further the achievement of high standards of care and to point out desirable and undesirable practices, whether clinical or related to the necropsy. It involves the collaboration of Midwives, General Practitioners, Obstetricians, Anaesthetists and Pathologists.^{4,11} Using the confidential enquiry into maternal deaths in the United Kingdom as a prototype we can develop a system for our country. In the past two decades the Confidential Enquiry into Maternal Deaths and (CEMD) and the Confidential Enquiry into Stillbirths and Infant deaths (CESDI) have been merged into a single Enquiry named Confidential Enquiry into Maternal and Child Health (CEMACH). CEMACH operates one central and nine regional offices; the central office consists of a Board, Enquiry staff and specific committees. The board is made up of representatives of Professional bodies/ stakeholders including:

Figure 1: A Diagram Outlining the Method of Confidential Enquiries in the United Kingdom.



1. The Royal College of Obstetricians and Gynaecologists
2. Royal College of Midwifery
3. Royal College of Pathologist
4. Faculty of Public Health Medicine
5. Royal College of Paediatrics and Child Health
6. Royal College of Anaesthetists¹³

The Royal College of Obstetricians and Gynaecologists hosts the enquiry while the central office coordinates the activities of the regional offices. Enquiries are initiated by the CEMACH Regional Manager (RM) upon notification of a maternal death by

- The health professional(s) in whose care the patient was
- The Coroner
- The Local Supervising Authority Midwifery Officers
- Others (figure 1)

A general strategy for instituting confidential enquiries into maternal deaths can be instituted in all states in Nigeria. The ministry of health in each state would appoint the central assessors for the state, each local government authority would have its "regional assessors" At the National level the Federal Ministry of Health and the National Population Commission would coordinate the reports from the state to produce a National document on Maternal Mortality.

Facility-based Maternal Deaths Review

Many health facilities already have regular reviews of maternal deaths to identify failures in the health care system. However ideal facility-based reviews should be quantitative in-depth investigations of the causes and circumstances surrounding each maternal death occurring in the facility.⁶ This requires the collaboration of all health professionals involved in the management of the patient: Midwives, General Practitioners, Obstetricians, Anaesthetists and Pathologists. This multidisciplinary team will meet at regular, fixed intervals to review all the deaths within a specific period of time. Contributory factors both avoidable and unavoidable would be identified with a view to changing substandard practices, improving management protocols and clarifying areas of responsibility. This critical evaluation of the clinical processes and the circumstances should produce written recommendations that can be faithfully implemented to bring about improvement in professional practice and training. Appropriate dissemination of the review report to health administrators may bring about the additional advantage of improved funding.

In all reviews and enquiries, confidentiality must be maintained as the aim is not to judge or discipline providers but to improve health care provision so as to achieve the short and long term goal of 'Safe Motherhood'. Facility-based reviews of maternal

death are limited in that they do not provide sufficient information about community factors that contributed to death and also do not give the complete picture about maternal deaths in a given population since the data generated does not represent the whole population. These reviews are not as rigorous as clinical audits which measure specific criteria that are essential rather than optional and for which sound research evidence exist. Clinical audit also measures quality of care provided against set targets.¹³

THE BENEFITS OF REVIEWS AND CONFIDENTIAL ENQUIRIES INTO MATERNAL DEATHS

- Problems leading to substandard care are identified such as failures in clinical care, shortage of staff and facilities; administrative failures as well as failures in back-up facilities like anaesthetic, radiological and pathology services
- Identification of these problems will hopefully result in solutions being proffered and consequent improvement in services and ensure a higher standard of clinical practice as well as supportive services
- When properly done they provide reassurance to all stake holders that their best interests are being considered; instilling greater confidence in both users and providers of the health system that the best quality of service is being achieved with the available resources.
- In countries where these enquiries are done periodically, maternal mortality rates have consistently decreased with every consecutive periodic report
- Reduction in maternal mortality rates would also reduce perinatal mortality rates, since both are caused by similar problems. Complications of pregnancy such as obstructed labour, eclampsia, sepsis; poor management during pregnancy, labour and delivery, as well as poor general health and nutritional status of women prior to pregnancy are linked to about 75% of the 7 million perinatal deaths that occur annually in developing countries.¹⁴

CONCLUSION

Ultimately, the aim of systematic investigation of Maternal Deaths is to improve the standard and quality of care of all pregnant women by identifying substandard care and preventing its reoccurrence where possible. This will be achieved by improving existing knowledge, practices, manpower and facilities where necessary and instituting precautionary measures. Since autopsies contribute to knowledge by exposing previously unsuspected facts, clarifying uncertain diagnoses and confirming pre-morbid clinical diagnosis it is absolutely essential that autopsies must be of the highest

standard possible to justify the confidence reposed in them. Autopsy reports must be accurate and comprehensive and quality control and assurance programmes must be in place to standardize autopsy techniques. In our environment where sophisticated investigative procedures are a luxury, the success of the investigation will hinge on the post-mortem examination.

REFERENCES

1. **Dada -Adegbola HO, Thomas JO.** Autopsy an audit tool: University College Hospital Ibadan experience. *Nig Qt J Hosp Med.* 1998; 8(1): 18- 21.
2. **Mantel GD, Buchmann E, Rees H, Pattinson RC.** Severe Acute Maternal Mortality: a pilot study of a definition for near miss. *British Journal of Obs & Gynae* 1998; 105:985-990.
3. **Harrison KA.** Maternal mortality in Nigeria: the real issues. *Afr J Reprod Health* 1997; 1(1):7-13.
4. **Hogberg U, Innala E, Sanstrom A.** Maternal Mortality in Sweden. *Obstet. Gynaecol.* 1994; 84(2): 240- 4.5. Guidelines for assessing sub-standard care in confidential enquiry into maternal deaths An Assessors h a n d b o o k . h t m www.doh.gov.za/docs/forms/guide_assessor.html - 12k (accessed 4/1/2005)
6. Beyond the Numbers: Reviewing maternal deaths and complications to make pregnancy safer. <http://www.who.int/reproductive-health/publications/btn/btn.pdf>. (accessed 4/1/2005).
7. **Odidi R.** Ending the scourge of pregnancy-related deaths. *THE GUARDIAN (Nigeria).* 1998:25; Pg 15.
8. **Daramola AO, Banjo AAF, Elesha SO.** Maternal deaths in the Lagos University Teaching Hospital: A Ten Year Review (1989 - 1998). *The Nigerian Postgraduate Medical Journal* 2004; 11(4): 274-8.
9. **Huss M, Bongain A, Bertrand M, Hofonan P, Grimaud D, Gillet JY.** Maternal Mortality in Nice. Results of a reproductive age mortality survey using death registries in the Nice University Hospital. 1986 -1998. *J. Gynecol Obstet. Biol. Reprod. Paris.* 1996. 25(6): 636-44.10. **Cotton DWK.** Historical Introduction. In *The Hospital Autopsy Cotton DWK & Cross SS (Eds), Butterworth-Heinemann* 1993: 1 - 7.
11. **Dawson I.** The confidential enquiry into maternal deaths, its role and importance for pathologists. *J. Clin. Pathol.* 1988: 41(8): 870 - 5.
12. **Knight B.** Deaths associated with pregnancy. In *Knight B. (Ed) Forensic Pathology.* Edward Arnold, London 1991: p394.
13. Why Mothers Die 2000-2002 - Report on confidential enquiries into maternal deaths in the United Kingdom (HTML version) http://www.cemach.org.uk/publications/WMD2000_2002/wmd-21.htm (accessed 30/12/2004).
14. **Campbell C, Koblinsky M, Taylor P.** Off to a rapid start: appraising maternal mortality and services. *Int. J. Gynaecol Obstet.* 1995: 48 Suppl: S33 - S52.