

A Confidential Review of Maternal Deaths on behalf of The Homerton University Hospital (NHS) Foundation Trust

The Homerton University Hospital (NHS) Foundation Trust (HUH) invited the London Clinical Senate to undertake a review of 4 maternal deaths that had occurred in 2013/14. The Trust was concerned about the unexpectedly high number of maternal deaths and wanted to take a proactive approach in:

- Highlighting any factors that may have contributed to the outcome that had not been identified in the hospital internal serious incident report
- Uncover systemic challenges that may affect the quality of health care in the area local to HUH and to make recommendations regarding how these factors could be addressed
- Focus on areas of good practice

The London Maternity Strategic Clinical Network (SCN) was asked to undertake the review on behalf of the Senate. The approach taken was in line with previous confidential reviews of maternal deaths. All records relating to the care of the women were anonymised, including the post-mortem report and serious incident investigation where available. A multidisciplinary panel of reviewers was convened and each case was analysed using a structured questionnaire and a process of appreciative enquiry. The review concentrates primarily on the care given by HUH

The scope of the review was limited by the amount of information available to the panel at the time of the review around some of the maternal deaths; for the more recent cases this was partly because the internal review process had not yet completed. For some cases this limited the ability of the panel to comment on broader issues such as service reconfiguration, staffing levels, increased acuity of women, capacity, and environmental factors.

The panel sought to review, in detail, the care of each woman with the aim of identifying any avoidable factors.

Overview of maternity care at Homerton University Hospital (NHS) Foundation Trust

The Trust serves a diverse population in the London Borough of Hackney and the City of London. In 2010³, the Indices of Deprivation showed that Hackney was the second most deprived local authority in the country. In contrast, the City of London (the smallest county in the UK) was judged as being the 262nd most deprived local authority out of 326. Both Hackney and the City of London had increasing populations and higher than average numbers of patients from Black, Asian and minority ethnic communities. The maternity unit is a large provider of services having delivered 6000 babies in 2013. There is a consultant-led delivery suite alongside a midwifery-led birth centre and the unit is supported by a level 3 neonatal unit. A Care Quality Commission (CQC) review in 2014 assessed the service as good in all five domains.

Between July 2013 and June 2014 HUH there were 4 maternal deaths. Maternal death is a rare occurrence with an incidence of 8.6/ 100000 maternities nationally and a higher incidence of 19.6 in London.^{1,2} Three of these deaths were classified as direct and one as indirect. This equates to a maternal death rate of 82/100000. This number of maternal deaths is higher than expected and the rate is four times the London rate. Due to the small numbers involved it is not possible to say if this is significant.

The Trust has been proactive in engaging this review of maternal deaths. Investigation of maternal deaths in the format of a confidential enquiry offers the opportunity to evaluate the care given in these cases from an external objective. Although maternal death is rare, maternal morbidity is increasingly common and maternal death may reflect issues with care for all women. The desired outcome from this review is to:

- Highlight any factors that may have contributed to the outcome that have not been identified in the hospital internal SI report
- Uncover systemic challenges that may affect the quality of health care in the area local to HUH and to make recommendations regarding how these factors could be addressed
- Focus on areas of good practice.

METHODOLOGY

Identification of cases

The definition of maternal deaths used in this report is in accord with that of the World Health Organisation (WHO) definition⁴ “The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes”. Termination of pregnancy in this definition refers to the ending of the pregnancy, whether by delivery, ectopic pregnancy, miscarriage and surgical or medical termination of pregnancy.

Anonymisation and Confidentiality

HUH was asked to provide the following records and documentation:

- Full maternity records
- Report of post-mortem examination
- Serious Incident report

The project leads ensured that the records and documents submitted to the review panel were anonymised to protect the identity of the woman and her family, hospital and the staff involved in the care. To ensure that confidentiality is maintained following the review, all documentation that is specifically related will be destroyed on completion of the final report.

The evaluation tool used for this review was based on an audit form adapted from a previous review process undertaken in London¹. The medical records of the women, post-mortem report and the serious incident report were used for case 1 & 2, for case three the maternity notes were used and for case 4 there were minimal notes (i.e. only the HUH notes, not those from her GP, her previous booking or her final admission which was to another hospital). The lack of post-mortem and internal review for case 3 was due to these not being completed and for case 4 because the patient was taken to a different hospital who have not been able to find the notes or the subsequent reports.

Panel Review

The panel consisted of experienced and contemporary practitioners all of whom had previous experience of reviewing maternal deaths. Panel assessors were provided with copies of the anonymised records and a copy of the proforma in advance of the panel meeting. The core panel included the following professionals:

- Panel chair
- Two consultant obstetricians
- Three senior midwives (all Supervisors of Midwives, one consultant midwife)
- Two consultant obstetric anaesthetists

The four cases were reviewed using a structured proforma allowing a structured and uniformed approach to analysis of each case which encouraged consistency in the evaluation of care provided. Answers to questions relating to avoidable events and missed opportunities were agreed by consensus during panel meetings.

ANALYSIS

[Details of Cases 1-4 have been redacted here under s41 to maintain these patients' confidentiality]

Consensus of themes and Development of Recommendations

All panel members had an opportunity to articulate their analysis of the cases and agreed with the findings as described in the report. A draft report was formulated and sent to all the panel members for comment. Each then had an opportunity to add further comments or disagree with the report. Each panel member agreed with the conclusions of the report and the recommendations put forward.

RESULTS

Overview of Maternal Deaths

Two of the cases did not have a post-mortem result available for the panel to review; it is the panel understanding that the pathologist had verbally reported in the third case. In two cases the internal serious incident process had not yet completed. Of the four cases reviewed, three had a known cause of death from post mortem; sepsis, massive obstetric haemorrhage and bilateral pulmonary emboli (verbal post mortem report)

One case did not have the full maternity notes and so a full review of this case was not possible. However the panel were able to offer some comments on the care given on the limited information that was available.

Socio-demographic Characteristics of the Maternal Deaths

One woman was in the 18-25 age group and one in the 25-35 age group. Two women were in the 40-45 age groups. The Confidential Enquiry into Maternal Deaths² showed that women in the 40-45 age group may be at higher risk of death.

All four women were from Black and Minority Ethnic (BME) groups. The percentage of BME women at HUH is approximately 60%. Black African women have a mortality rate nearly six times higher than white women and to a lesser extent, Black Caribbean and Middle Eastern. *"Overall, 42% of direct maternal deaths occurred in women of Black and minority ethnic groups and 24% of indirect deaths, giving an overall percentage of 31% of women who died of maternal causes declaring themselves to be from non-white ethnic groups. The maternal mortality rate for Direct causes among women from Black and other minority ethnic groups is significantly different ($P < 0.001$) when compared with the white ethnic group"*

One of the women who died was non-English speaking. The use of professional interpreting services was not offered at booking and does not appear to have been organised for any other antenatal appointments; consent for surgery was taken by a doctor who spoke her language. The NICE 2008 antenatal care guidelines⁶ state that information should be given in a form that is easy to understand and accessible to pregnant women who do not speak or read English.

Health and Behavioural Characteristics of Maternal Deaths

All four cases were classified as high-risk at booking. None of the women had received pre-pregnancy counselling, contrary to national recommendations⁶. The vulnerable woman with two pre-existing co-morbidities had not had the full extent of her problems highlighted by the GP. The 2011 report emphasizes the importance of two-way communication with the woman's GP and antenatal services and ensures timely referral to obstetrician and/or other specialist where necessary². It was recommended by the panel that GPs should discuss details of vulnerable women directly with a named professional to ensure that all the pertinent information is transferred and that the appropriate care is arranged.

In respect of other health behaviours, one woman was known to be a smoker. NICE guidance recommends that women who smoke should be referred to an evidence-based stop smoking service⁸.

Overview of Care Provided

NICE⁶ guidance states that pregnant women should access antenatal care ideally by 10 weeks gestation. None of the women in this review attained this standard and were booked at 11, 12, 12+6 and 22 weeks; although the woman who booked at 22 weeks had already been booked elsewhere.. The guidance makes reference to women with complex social needs who would particularly benefit from early intervention from antenatal services.

Antenatal Care

All four women were identified as needing consultant-led care at booking. All of the women had a venous thromboembolism assessment (VTE) at booking which adheres to NICE guidance⁶. One of the women should have triggered on the VTE checklist as she had a high BMI and increased maternal age. This appears not to have been recognized and followed through. Translation for the non English-speaking woman was provided by her husband at booking. The confidential enquiry² recommended that all women should have access to professional interpreting services. The use of family members as interpreters is not acceptable as it may inhibit the woman from disclosing intimate information (especially in domestic violence cases). Additionally the information passed back to the woman via the family member may not reflect that intended.

All women were appropriately referred to a consultant and/or other services. The consultant review correctly identified the risk factors in three of the cases; the fourth did not survive to have her consultant appointment.

[Information redacted under s41 (confidentiality)]

Avoidable Factors Identified by the Review Panel

As previously discussed, confidential enquiries into maternal deaths, both nationally have indicated that sub-standard care is a factor in some maternal deaths^{2,5}. In the most recent UK report, the assessors classified 64% of direct deaths and 40% of indirect deaths as having some degree of substandard care.²

Of the four deaths examined in this review, two cases had avoidable factors that were identified by the expert panels, indicating opportunities for improvement.

Diagnosis/recognition of high-risk

1. Lack of documentation of an appropriate post-op plan for a woman who had a PPH and was at high risk of further haemorrhage
2. Lack of recognition of deteriorating woman in recovery post op.
3. Lack of recognition of long term, ongoing sepsis
4. Lack of regular review by a consultant in a woman with on going pyrexia
5. Failure to appreciate the extent of the vulnerability of one woman with complex social and health problems
6. Lack of communication between services / the GP in case [s41].

Referral to specialist

1. There was a delay in referring to the haematologist in the case with massive ongoing obstetric haemorrhage. Code red (ie activation of massive obstetric haemorrhage protocol) should always be called to alert the haematologist even when all the surgical team are present. The Trust code red system automatically alerts the haematologist and haematology technician; however, there was a delay in this case.
2. The microbiologist should have reviewed the woman with postnatal sepsis more than once, especially when she did not appear to be recovering
3. There was delay in referring for a CT scan to identify the source of infection.

Treatment

1. There was a delay in fluid resuscitation in recovery. The woman was cold and clammy before resuscitation was initiated.
2. There was a delay in giving blood products
3. There was a delay in making a decision for hysterectomy in 2 of the 4 cases

Education

1. There was a lack of recognition of shock and signs of a deteriorating patient.
2. Lack of recognition of the signs and consequences of postnatal sepsis
3. Lack of awareness of the importance of having an interpreter
4. There was a lack of appreciation of the degree of vulnerability of the woman and her children in Case [s41] leading to a delay in referral to appropriate services.

Documentation

1. Lack of documentation about the risks and failure rates of sterilization
2. Lack of documentation to determine who took observations.
3. Scoring on MEOWs charts not correctly calculated
4. Lack of documentation of when alternative action could be considered but were rejected (i.e. with the lack of facilities of interventional radiology)

Communication

1. Next of kin should be discussed and documented at booking
2. Professional interpreters (these can be telephone links) need to be used for every contact with non-English speaking women
3. Lack of teamwork after the caesarean section where the woman had multiple fibroids – the recovery nurses/midwives did not appear aware of the high risk status

Examples of Good Practice

The panel were asked to identify areas of good practice demonstrated in the cases above. These are as follows:

1. The Public Health Midwife reviewed a high risk woman the day after her booking her initial presentation
2. The woman who refused blood products got optimal antenatal and intrapartum care
3. In recognition of the high risk status of one woman, the ELCS was appropriately brought forward to 38-39 weeks instead of the usual 39-40 weeks
4. Excellent support from SOM for the family (case [s41])
5. Good consultant obstetrician led support for the family in case [s41]
6. Clinicians were amenable to come in from home even though they were not on call in case [s41]
7. Excellent response to maternal collapse in theatre. Optimal resuscitation using the ALS algorithms with senior clinicians in case [s41].
8. Cell salvage considered. Case [s41]

Avoidable Factors

All of the possible avoidable factors noted by the panel and individual members relate closely to the key recommendations of previous confidential enquiries^{2,4}.

The records of the four cases show that these lessons were frequently applied but close scrutiny of any patient records will reveal some examples of less than perfect care. There are valuable learning points for all levels of staff from these cases.

RECOMMENDATIONS

- Professional interpreters should always be used for women who have been identified as requiring interpreting skills ^{2,6}
- Next of kin should always be documented in the notes and confirmed on every admission.
- The Situation Background Assessment Recommendation (SBAR) or similar communication tool should always be used especially when there are a number of clinicians and specialties involved in a woman's care.
- A postnatal plan of care must always be documented for women with blood loss >1 litre.
- All staff should participate in multidisciplinary skills and drills sessions for the management of major obstetric haemorrhage (at least once/year). This should be organised as a core component of mandatory training and include training in quantitative measurement of blood loss.
- The obstetric department should review their maternal haemorrhage guidelines against the Maternity SCN toolkit¹²
- All women I should have their observations consistently recorded on a Modified Early Obstetric Warning Score (MEOWs) chart. This should be analysed by a registered health professional not a health care assistant
- Use of the MEOWS charts in all maternity areas should be audited every 3-6 months to demonstrate improvement
- The Surviving Sepsis care bundle¹¹ should be used in cases of suspected sepsis.
- Training to recognise sepsis should be undertaken by all clinical staff
- Women with abnormal observations (eg tachycardia, temperature or tachypnoea) in the post natal period should be reviewed every day by the obstetric medical team, with early consultant involvement if the woman is deteriorating or needs to return to theatre. *The panel has received an update from the Trust that a daily consultant postnatal ward round has already been implemented.*
- Women with ongoing sepsis should be discussed with (and reviewed by) the microbiologist.
- Consultants in the Trust should review the decision making process for performing a hysterectomy in the context of haemorrhage or sepsis
- The organisation must ensure compliance with correct use of the WHO safer surgery check list"
- The Trust should review its pathways for the care of vulnerable women
- Supervisor of midwives to be represented at maternal death investigations

References

1. NHS London, Strategic Health Authority, *Maternal Death Review* (2011)
2. Centre for Maternal and Child Enquiries *Saving Mothers' Lives: reviewing maternal deaths to make motherhood safer: 2006–08*. (Eighth Report on Confidential Enquiries into Maternal Deaths in the United Kingdom) BJOG 2011; 118(Suppl. 1): pp1–203
3. Department for Communities and Local Government *English Indices of Deprivation* (2010)
4. World Health Organisation definition of maternal mortality
<http://www.who.int/healthinfo/statistics/indmaternalmortality/en/>
5. Lewis, G (ed) 2007. Confidential Enquiry into Maternal and Child Health (CEMACH). *Saving Mothers' Lives: reviewing maternal deaths to make motherhood safer - 2003-2005*. (Seventh Report on Confidential Enquiries into Maternal Deaths in the United Kingdom)
6. National Institute for Health and Care Excellence (NICE) Clinical Guideline 62 Antenatal Care (2008) Revised 2014
7. Centre for Maternal and Child Enquiries(CMACE)/Royal College of Obstetrics and Gynaecology (RCOG) *Joint Guideline for the Management of Women with Obesity in Pregnancy* (2010)
8. National Institute for Health and Care Excellence (NICE) Clinical Guideline 26 *Quitting Smoking in Pregnancy and following Childbirth* (2010)
9. National Institute for Health and Care Excellence (NICE) Clinical Guideline *Pregnancy and complex social factors: A model for service provision for pregnant women with complex social factors* (2010)
10. World Health Organisation (WHO) Guidelines for the management of postpartum haemorrhage and retained placenta (2009)
11. Dellinger RP, Levy MM, Rhodes A, et al: Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock: 2012. Crit Care Med 2013; 41:580-637.
12. London Maternity Strategic Clinical Network *Major Obstetric Haemorrhage Toolkit* (2014)