Obstetric complications affect the long term survival of women in Burkina Faso

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• All the study participants
• Co-authors: Seydou Drabo; Rasmané Ganaba; Johanne Sundby; Clara Calvert; Véronique Filippi
• Study colleagues
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Background

- International debates about maternal health in low-income countries tend to focus on maternal mortality, particularly deaths around the time of delivery.
- Increasing concern that these deaths are “only the tip of the iceberg” in terms of the impact of poor availability and quality of maternity services.
- Countries with high maternal mortality have a large burden of pregnancy-related complications and associated disabilities.
- Of growing interest are complications that are so severe that they would likely have killed the woman had she not received timely medical care – often referred to as near-miss complications.
- In low-income countries, maternal near-misses are often considered “obstetric successes” because ultimately the woman’s life was saved through a focused medical intervention. However, little is known about the long-term outcome of these complications.
Objective

• To what extent does surviving a near-miss event actually mean that a maternal death has been averted?
• Are survivors of such acute emergencies at disproportionate risk of late maternal deaths or adverse outcomes in subsequent pregnancies
• Drawing on a longitudinal cohort study in Burkina Faso, this paper aims to
  – determine whether a near-miss complication compromises survival over several years
  – explore the medical and health systems reasons for deaths occurring after such complications
  – consider implications for safe motherhood strategy
<table>
<thead>
<tr>
<th>Maternal health indicators, Burkina Faso</th>
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<tbody>
<tr>
<td>Fertility rate (2008)</td>
</tr>
<tr>
<td>Maternal mortality ratio (confidence interval) (WHO 2010)</td>
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<tr>
<td>C-section rate</td>
</tr>
<tr>
<td>Percentage of births delivered by skilled birth attendants (WHO 2009)</td>
</tr>
<tr>
<td>Near-miss incidence</td>
</tr>
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</table>
A prospective cohort study

- Prospective cohort study of 1013 recently pregnant women selected before discharge from hospitals across Burkina Faso (Late 2004, early 2005).
  - 337 of these women had experienced near-miss maternal mortality with different pregnancy outcomes: live birth (199), perinatal death (74) or pregnancy loss from miscarriage or abortion (64).
  - For every woman with near-miss complications, two unmatched control women with uncomplicated delivery were sampled in the same hospital (677).
- All women followed for 4 years.
Verbal autopsies

- Detailed enquires on deaths identified during follow-up using “verbal autopsy”
  - An approach used to obtain cause of death by interviewing lay respondents on the signs and symptoms experienced by the deceased before death (WHO 2007)
  - Verbal autopsy is primarily used “where vital registration systems are weak or the proportion of a population under medical care is low”
- Likely medical causes of death were assigned on the basis of the structured verbal autopsy data using multiple physician reviews and were tabulated using the ICD
- Structured data supplemented with open-ended interviews with family members and care-takers on circumstances leading up to women’s death and consequences of deaths (social autopsies)
Mortality findings

Maternal survival over 4 years since discharge

- Near-miss
- Uncomplicated
Likely medical causes of death

• Nine (60%) of the deaths among women who experienced a near-miss complication were pregnancy-related:
  – six were late maternal deaths (within 42 days and one year after the end of pregnancy)
    • due to organ failure following septic abortion (1), TB related to HIV in a woman who had had puerperal sepsis (1), anaemia (2), infection (2), and hypertension (eclampsia) (1).
  – three more deaths occurred within 42 days of a subsequent pregnancy and were classified as maternal deaths.
    • Due to hypertension, septic abortion and haemorrhage following c-section suture complications respectively.
  – At least four of the seven women who died from a pregnancy-related death were HIV positive.

• None of the deaths among women with uncomplicated delivery were pregnancy-related.
<table>
<thead>
<tr>
<th>Identification Number</th>
<th>Age (years); marital status; and number of pregnancies at selection</th>
<th>Date of end of index pregnancy</th>
<th>Near-miss diagnosis and pregnancy outcome at selection (incl. HIV + status)</th>
<th>Time of death in relation to end of index pregnancy</th>
<th>Likely medical cause of death</th>
<th>Survival status of index child at last interview/verbal autopsy</th>
<th>Number of new pregnancies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2109</td>
<td>25; single; 2 (4?)</td>
<td>09.02.2005</td>
<td>Sepsis; HIV+; early pregnancy loss (induced abortion)</td>
<td>7 months (01/11/05)</td>
<td>Septic abortion, with general infection; organ failure</td>
<td>Not applicable</td>
<td>0</td>
</tr>
<tr>
<td>2170</td>
<td>34; single; 8</td>
<td>26.03.2005</td>
<td>Infection; HIV+; live birth</td>
<td>35 days</td>
<td>Tuberculosis (HIV)</td>
<td>Dead</td>
<td>0</td>
</tr>
<tr>
<td>3088</td>
<td>26; married (polygamous); 8</td>
<td>15.03.2005</td>
<td>Anaemia; live birth</td>
<td>2 months</td>
<td>Anaemia, immune problems, sepsis?</td>
<td>Dead at month 3 interview</td>
<td>0</td>
</tr>
<tr>
<td>5151</td>
<td>17; single; 1</td>
<td>19.01.2005</td>
<td>Anaemia; perinatal death</td>
<td>4 months</td>
<td>Infection?</td>
<td>Dead?</td>
<td>0</td>
</tr>
<tr>
<td>5234</td>
<td>25; married; 2</td>
<td>19.02.2005</td>
<td>Sepsis; HIV+; live birth</td>
<td>40 days</td>
<td>Anaemia?</td>
<td>Dead</td>
<td>0</td>
</tr>
<tr>
<td>7082</td>
<td>18; cohabiting, 1</td>
<td>22.02.2005</td>
<td>Pre-eclampsia; live birth</td>
<td>Uncertain</td>
<td>Coma, eclampsia?</td>
<td>Alive</td>
<td>0</td>
</tr>
</tbody>
</table>

**Maternal deaths in new pregnancy**

<table>
<thead>
<tr>
<th>Identification Number</th>
<th>Age (years); marital status; number of pregnancies at selection</th>
<th>Date of end of index pregnancy</th>
<th>Near-miss diagnosis and pregnancy outcome at selection (incl. HIV + status)</th>
<th>Time of death in relation to end of index pregnancy</th>
<th>Likely medical cause of death</th>
<th>Survival status of index child at last interview/verbal autopsy</th>
<th>Number of new pregnancies</th>
</tr>
</thead>
<tbody>
<tr>
<td>3024</td>
<td>23; cohabiting; (polygamy); 2</td>
<td>26.01.2005</td>
<td>Hypertension; live birth</td>
<td>Between 1 year and year 3</td>
<td>Pregnancy related or essential hypertension; Hellp syndrome?</td>
<td>Not applicable</td>
<td>1</td>
</tr>
<tr>
<td>3085</td>
<td>32; married (polygamy); 6</td>
<td>25.02.2005</td>
<td>Haemorrhage; early pregnancy loss</td>
<td>1 year and 6 months (14/08/2006)</td>
<td>Septic abortion, organ failure</td>
<td>Not applicable</td>
<td>1</td>
</tr>
<tr>
<td>4080</td>
<td>30; married (polygamy); 6</td>
<td>07.03.2005</td>
<td>Haemorrhage, infections, other organ failure; early pregnancy loss</td>
<td>3 years (03/2008)</td>
<td>Haemorrhage following c-section suture failure; infection post c-</td>
<td>Not applicable</td>
<td>2</td>
</tr>
</tbody>
</table>
Health systems causes of late maternal deaths

• Premature discharge from hospital following near-miss complications

• Inadequate follow-up for unresolved health problems, e.g. sepsis following unsafe abortion

• Cost and transport constraints disrupting referral chains

• Often exacerbated by lack of social and material support
Case example of late maternal death

- 25 year old woman moved from rural village to town to work in a bar
- Unsafe abortion after unstable relationship with urban ‘fonctionnaire’
- Treatment for ‘near-miss’ septic abortion after intense stomach aches
- Stigmatisation, loss of income and broken dreams
- Chronic infection and unaffordable care; hospitalisation six months after discharge; resulting in death at brothers’ home 7 months after the septic abortion
- Importance of social support from relatives, but futility in face of structural impediments
- Substantial economic consequences of death for brothers
Health system factors contributing to maternal deaths in subsequent pregnancies

• No special attention to high risk cases during antenatal visits in subsequent pregnancy
• Unmet need for contraception leading to unwanted pregnancy and exacerbated pregnancy-induced hypertension and subsequent death
• Inadequate emergency obstetric care in subsequent delivery, including severe delays in the hospital, premature discharge and poor quality follow-up
• Health systems factors must be seen in conjunction social and economic determinants of health and their impact on access to healthcare
Discussion

- The impact of poor availability and quality of maternal services is not simply immediate death or longer-term disability or illness, but also a sustained higher risk of death for those women who experience severe pregnancy complications.
- This sustained risk of women’s death challenges us to expand our analytical focus beyond acute emergencies occurring in the intrapartum period and adopt a life-cycle perspective.
- The impact of co-morbidities such as HIV/AIDS and TB and diseases of poverty such as anaemia suggests that indirect causes of maternal mortality, which are aggravated by pregnancy, may be more important than is generally recognised.
  - Unlike direct causes, indirect causes are not concentrated around delivery and may require longer and more differentiated clinical management, including family planning.
Implications for global maternal health strategy

- Current focus on intrapartum care; skilled birth attendance and emergency obstetric care (including post-abortion care)
- Appropriate response to highest level of maternal mortality in the intrapartum period
- Necessary – without skilled birth attendance and EmOC maternal near-misses would likely have been maternal deaths
- But not sufficient....
- Findings support the need for a stronger continuum of care and greater attention to indirect causes of maternal mortality