Lessons from 60 yrs. national and international experience of reviews of Maternal Death and Near Misses

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University College London
“Beyond the Numbers”

1. Verbal autopsies: maternal deaths in the community
2. Facility based reviews: maternal deaths in facilities
3. Confidential enquiries into maternal deaths
4. Learning from women who survived, “near miss” reviews
5. Evidence/criterion based clinical audit
“Whose faces are behind the numbers? What were their stories? What were their dreams? They left behind children and families. They also left behind clues as to why their lives ended so early”.

Callaghan W. 2004
“Facts and figures are essential, but insufficient, to translate the data and promote the acceptance of evidence-based practices and policies…. narratives, when compared with reporting statistical evidence alone, can have uniquely persuasive effects in overcoming preconceived beliefs.

Stories help the public make sense of population-based evidence. Guideline developers and regulatory scientists must recognize, adapt, and deploy narrative to explain the science of guidelines to patients and families, health care professionals, and policy makers to promote their optimal understanding, uptake, and use.”

BTN workshops

- Held in all WHO Regions of the world
- Over 60 countries have piloted one or more technique
- Supported by Governments UNFPA, UNICEF, World Bank, WHO and numerous other NGOs and universities
- Still ongoing - 10 year follow-up in Central Asian republics April 2014
- Near-Middle East just starting
All these approaches

• Identify cases
• Review cases confidentially (sometimes anonymously)
• Look for avoidable factors
• promote change in local /regional national practices
• Review the outcome of these changes
• Refine and develop
A culture of success

• *Individual* responsibility and ownership
  • Professionalism
  • Fear of blame and punishment
  • Disillusionment through lack of action

• Proactive *institutional* ethos which promotes learning as a part of crucial part improving service and quality of care

• Supportive policy environment at *national/local* level
“fear is toxic to both safety and improvement”.

The maternal mortality action cycle

1. Define cases
2. Identify and collect data
3. Make recommendations
4. Assess data
5. Implement and refine
The maternal mortality action cycle

1. Identify and collect data
2. Define cases
3. Make recommendations
4. Assess data
5. Implement and refine

The cycle is continuous, moving from one step to the next, and then back to identify and collect data, allowing for continuous improvement and refinement in the process of addressing maternal mortality.
Saving Mothers Lives

Reviewing maternal deaths to make motherhood safer, 2005-2006
Acting on the results

• Publication

• National policy level
• National professional level
• Health commissioning level

• Hospital/clinic level

• Personal level

• Health information
• Media

• Developing, implementing and evaluating audible recommendations
Disseminating findings

• How often and to whom?

• Community/facility level
  Team meetings
  Community meetings
  Printed reports
  Training programmes

• Regional or national level
  Scientific and statistical publications
  Web-sites
  Newsletters, bulletins, fact sheets and press releases
  Professional conferences
  Posters or media
Target audiences

- Politicians
- Ministry of Health and other policy makers
- Obstetricians
- Other doctors and health care workers
- Midwives/ nurses etc
- Hospital management
- Local policy makers and administrators
- Public
- Women
## Realistic Actions

### At local/facility level
- Quick response
- Partogram
- Team building
- Local protocols
- Resources/drugs/blood
- Revamp staff rotas
- Community links
- Local transport
- Respect

### National level
- Clinical Guidelines
- Training materials
- National pressures and policies
- Advocate for resources
- Drugs, blood
Recommendations both national and local

- Not too many
- Focused
- Based on your evidence
- Simple
- Practical /Realistic
- Achievable
- Implementable
- Action orientated
- Evaluated
Evaluation

- Completes the surveillance cycle
- What is evaluated will depend on what was found to be the problem
- Did the actions taken make a change?
- Improvement can be in community, health care system, quality of care or society
- Were the results of the surveillance system/review worth the cost/
- Refine and start again
Clinical care
UK *Direct* maternal death rates 2006-12

(per 100,000 maternities)
Leading causes of direct maternal deaths
UK 1985-2013
per million maternities

- Pregnancy induced hypertension
- Thromboembolism
- Haemorrhage
- AFE
- Sepsis
Leading causes of direct maternal deaths
UK 1985-2013
per million maternities

- Pregnancy induced hypertension
- Thromboembolism
- Haemorrhage
- AFE
- Sepsis
Key standards - sepsis

1. Recognition
   - RCOG Green-top Guideline 64a: Bacterial sepsis in pregnancy: Sections 5 and 6
   - RCOG Green-top Guidelines 64b: Bacterial sepsis following pregnancy: Section 7

2. Response and management
   - Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock, 2012: Tables 5, 6 and 8, Figure 1.
   - The Sepsis Six (http://survivesepsis.org/the-sepsis-six/):
   - RCOG Green-top Guideline 64a: Bacterial sepsis in pregnancy
   - RCOG Green-top Guidelines 64b: Bacterial sepsis following pregnancy

3. Investigations
   - Surviving Sepsis Campaign Bundles: (http://www.survivesepsis.org/bundles/Pages/default.aspx)

4. Condition-specific guidance
   - British Thoracic Society guidelines for the management of community acquired pneumonia in adults: update 2009: Figure 8
   - Critical care management of adults with influenza with particular reference to H1N1 (2009)
   - Surgical site infection – NICE Guideline CG74 Prevention and treatment of surgical site infection
Clinical Guidelines

NICE guidelines

- Antenatal care
- Caesarean Section
- Intrapartum care
- Postnatal care
- Mental health
- Diabetes in pregnancy
- Socially complex pregnancies
- etc

Royal College of Obstetricians and Gynaecologists
Modified Early Obstetric Warning Scores (MEOWS)

- Pulse
- Blood Pressure
- Temperature
- Respiratory rate
- Partograph
Standards for Maternity Care

Report of a Working Party

Royal College of Obstetricians and Gynaecologists

Royal College of Obstetricians and Gynaecologists

Royal College of Midwives

Royal College of Anaesthetists

Royal College of Paediatrics and Child Health

June 2008
Coincidental (Fortuitous) deaths

Deaths from unrelated causes which happen in pregnancy or up to one year after delivery.
Deaths from suicide UK 2000-08
Publications
Maternal deaths from thromboembolism 2010-13

Timing of deaths from VTE

- 50% (24) thromboses occurred antenatally (some died postnatally)

- 50% (24) occurred postnatally
  - 50% (12) delivered by CS (9 emCS; 3 eICS)
  - 10 delivered vaginally
  - 2 post surgical procedures in early pregnancy
Risk factors
(among women who died during or up to six weeks after pregnancy)

- 40 (83%) had risk factors
- 8 (17%) had no risk factors

<table>
<thead>
<tr>
<th>Number of risk factors</th>
<th>Number of women</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
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<td>3</td>
<td>13</td>
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<td>4</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
</tr>
</tbody>
</table>
Obesity

- 53% (34) had BMI ≥ 25
- 38% (24) were obese BMI ≥ 30
  - 11% (8) had a BMI ≥ 40
- 16% (10) were overweight
Improvements in care

• In 54% (26) assessors identified improvements in care which may have made a difference to outcome
• In 52% (25) the care of the women was not compliant with the RCOG obstetric thromboprophylaxis guideline current at the time of their deaths.
A morbidly obese parous woman (prescribed inadequate dose antenatally) who underwent elective CS was only given a prescription of LMWH to cover two weeks although it was intended that the GP prescribe another four weeks of prophylaxis. This did not happen. She contacted her GP a total of four times with leg pain before a referral to hospital as an outpatient was made. She collapsed en route to hospital, was thrombolysed but died a week later within a month of delivery.
Learning points

- VTE can develop despite the use of thromboprophylactic or treatment doses of LMWH, so women taking LMWH who present with clinical features suggestive of a PE should be appropriately investigated.
- A normal chest x-ray does not exclude PE.
Key messages

- Maternal deaths from venous thromboembolism remain the major group of direct deaths where a decrease is not currently occurring.
- Highlights the importance of careful and repeated risk assessment in order to aid prevention.
- Pregnant and postpartum women presenting to the Emergency Department with medical problems should be discussed with a member of the maternity medical team. This should ensure appropriate investigations and treatments for PE are not withheld and prophylaxis is prescribed where appropriate.
Key Messages

• The first thromboprophylactic dose of low molecular weight heparin (LMWH) should be given as soon as possible after delivery provided there are no obstetric concerns regarding postpartum haemorrhage and regional analgesia has not been used.

• Hospitals should develop and women should be offered patient information sheets about venous thromboembolism prevention, diagnosis and treatment.
Beware of Blood Clots!

Did you know that blood clots are more common in the first few weeks after giving birth?

Stop the Clot!

“Have you asked about your anti-clot injection?”

Check with your midwife or with your doctor whether you need one.
National policy actions
Maternity Matters

National framework for the local delivery of high quality, safe and accessible services that are women focused and family centred. Services should be accessible to all women and be designed to take account of their individual needs.
Maternal mortality rates by social class UK 2000-02, E&W 2003-08

Lewis G. Saving Mothers Lives

GLCEMD/NMCRromania13
Population level: Maternal death rates by Black African, Black Caribbean and White ethnic groups England 2000-08

Maternal mortality rate per 100,000 maternities

- White
- Black African
- Black Caribbean

p=0.04
p=0.003
p=0.5
Access to care: % of women who were poor or non attenders at antenatal care 03-08

<table>
<thead>
<tr>
<th>Category</th>
<th>03-05</th>
<th>06-08</th>
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<tbody>
<tr>
<td>Domestic abuse</td>
<td>81</td>
<td>32</td>
</tr>
<tr>
<td>Known to CPS</td>
<td>81</td>
<td>44</td>
</tr>
<tr>
<td>Substance misuse</td>
<td>78</td>
<td>44</td>
</tr>
<tr>
<td>Black Caribbean</td>
<td>57</td>
<td>22</td>
</tr>
<tr>
<td>Black African</td>
<td>57</td>
<td>8</td>
</tr>
<tr>
<td>Single unemployed</td>
<td>56</td>
<td>41</td>
</tr>
<tr>
<td>No English</td>
<td>35</td>
<td>16</td>
</tr>
</tbody>
</table>
“Aggregated data may camouflage variations (between or) within organisations that would be revealed by intelligent fine grained analysis at local level.”

A promise to learn

“Because human error is normal and, by definition, unintended, well-intentioned people who make errors or who are supported in systems that have failed around them need to be supported, not punished, so they will report their mistakes and the system defects they observe so that all can learn from them”.

Local administrative actions
# Maternity Dashboard

<table>
<thead>
<tr>
<th>Activity</th>
<th>Goal</th>
<th>Red Flag</th>
<th>Measure</th>
<th>Comment</th>
<th>Data Source</th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUNE</th>
<th>JULY</th>
<th>AUG</th>
<th>SEPT</th>
<th>OCT</th>
<th>COMMENTS / ACTION THIS MONTH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organization</strong></td>
<td>Number within group range on Labour Ward Forum</td>
<td>4 reps</td>
<td>&lt; 2</td>
<td>Minutes</td>
<td>Aim for 4 but not guaranteed</td>
<td>DATAX</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Births</strong></td>
<td>Benchmarked to 5100 per annum</td>
<td>5000 (450)</td>
<td>&gt; 450</td>
<td>Births</td>
<td>30% over 2 month period</td>
<td>DATAX</td>
<td>370</td>
<td>383</td>
<td>405</td>
<td>417</td>
<td>431</td>
<td>431</td>
<td>410</td>
<td>428</td>
<td>407</td>
<td>428</td>
</tr>
<tr>
<td><strong>Scheduled Bookings</strong></td>
<td>Bookings (total visit scheduled)</td>
<td>549 (235)</td>
<td>&gt; 500</td>
<td>Bookings (visit scheduled - % on schedule - 15%)</td>
<td>DATAX</td>
<td>291</td>
<td>278</td>
<td>422</td>
<td>427</td>
<td>448</td>
<td>481</td>
<td>496</td>
<td>466</td>
<td>432</td>
<td>InADEM</td>
<td></td>
</tr>
<tr>
<td><strong>Irru Op. Unit</strong></td>
<td>Women in Labour</td>
<td>15-17%</td>
<td>&lt; 15% • &gt;/= 10%</td>
<td>InADEM</td>
<td>11.8</td>
<td>7.6</td>
<td>10.6</td>
<td>10.2</td>
<td>10.6</td>
<td>11.2</td>
<td>13.8</td>
<td>12.7</td>
<td>15</td>
<td>InADEM</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>C-Section</strong></td>
<td>Total cases (planned &amp; unscheduled)</td>
<td>&lt; 22%</td>
<td>&gt; 25%</td>
<td>C-section/Birth</td>
<td>30% above cap &amp; refer to other provider</td>
<td>DATAX</td>
<td>25.5</td>
<td>22.3</td>
<td>24.4</td>
<td>28.3</td>
<td>23.2</td>
<td>19.5</td>
<td>21.7</td>
<td>26.1</td>
<td>22.6</td>
<td>Resident consent was increased to 60 hours per week</td>
</tr>
</tbody>
</table>

| **Workforce** | Weekly hours of consultant cover on labour ward | > 40 hours | < 44 hours | Hours | Per week | Labour Ward (46) | 56 | 46 | 54 | 46 | 56 | 46 | 52 | 46 | 54 | Under review |
| **Midwife/night ratio** | 1.30 | > 1.41 | WTE/shifts | HOSM | 1.30 | 1.36 | 1.3 | 1.34 | 1.36 | 1.3 | 1.3 | 1.3 | Under review |
| **Severe obstetrics ratio** | < 1.15 | > 1.21 | HOSM | 1.17 | 1.19 | 1.10 | 1.19 | 1.14 | 1.16 | 1.18 | 1.17 | Under review |
| **ED & theatre/operating ratio** | < 10% | < 8% | Ratio/weekly | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | Under review |
| **Maternal Mortality** | Exclusions | No. of patients | DATAX | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Under review |
| **Kits administered in obstetrics** | No. of kits | No. of patients | DATAX | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Under review |
| **Blood transfusions at units of blood** | No. of units | No. of patients | DATAX | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Under review |
| **Preeclampsia hypertension** | No. of patients | No. of patients | DATAX | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Under review |
| **Neonatal mortality** | Number of cases of meconium aspiration | > 95% | No. of patients | DATAX | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | Under review |
| **Neonatal mortality** | Number of cases of hypoxic encephalopathy (Grades 2 & 3) | > 95% | No. of patients | DATAX | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | Under review |
| **Risk Management** | Number of UX | Investigations undertaken | Risk Drop | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Under review |
| **Invasive obstetric delivery** | < 1% | > 3% | InADEM | Risk Drop | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | Under review |
| **Major PPH > 21** | < 10% | > 15% | InADEM | Risk Drop | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | Under review |
| **Shoulder dystocia** | < 4% | > 10% | DATAX | Risk Drop | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | Under review |
| **3rd degree tear** | < 4% | > 10% | DATAX | Risk Drop | 14 | 5 | 5 | 6 | 5 | 5 | 5 | 5 | Under review |

| **Complaints** | Number of complaints | < 1/week | > 2/month | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Under review |
| **Number of time all closed for admissions in each month** | < 1 per month | > 2 times per month | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Under review |
Professional actions
“A maternity conscience”
“Back to Basics” identification and management of

- Pyrexia and post natal pyrexia,
- Sore throats
- Pain
- Abdominal pain and D & V
- Breathlessness
- Headache
- Anxiety and distress
- Good mental health practice
- Unexplained physical symptoms
Key features of successful reviews

- Supported and owned by health professionals who understand the need for this
- No payment
- Sustainable
- Independent from legal process
- “no names no blame”
- Understand human error
- Supported by local administrators/Ministries of Health
- Include all provides /public/private etc
- Wide dissemination and action on the results
A maternity conscience

Supportive policy environment

Supportive institutional behaviour

Define cases

Identify and collect data

Assess data

Make recommendations

Implement and refine
• www.npeu@ox.ac.uk/mbrrace-uk

• www.rcog.org.uk/en/guidelines

• www.nice.org.uk/Guidance