Developing a bundle to improve maternal sepsis care in low-resource settings: An International Delphi Consensus

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Declaration of interests - none
Maternal Sepsis

- Maternal sepsis is the third most common direct cause of maternal mortality, accounting for 11% of maternal deaths
  
  Say L, 2014

- “A life-threatening condition, defined as organ dysfunction resulting from infection during pregnancy, childbirth, post-abortion or postpartum period”
  
  WHO Statement on Maternal Sepsis, 2017

- “Standardising the definition was considered a mandatory step to improve the assessment of the burden of maternal sepsis”
  
  Comment in Lancet Global Health, February 2017
What is a bundle?

- “A small, straightforward set of evidence-based practices that, when performed collectively and reliably improve patient outcomes”
  Institute for Healthcare Improvement

- Bundled care (i.e. the Surviving Sepsis Campaign Bundle) reduces mortality in adult sepsis, in high income settings
  Damiani E, 2015
Project Aims

□ **Aim:**
  – To develop a maternal sepsis bundle specifically for use in low and lower-middle income countries

□ **Principles:**
  – Suitable for women in pregnancy and puerperium
  – Practical to initiate in a health centre setting in a low-income country
  – Evidence based
  – Robust development with broad stakeholder involvement
  – Integration with existing practices and easy to implement
  – Strengthen systems and support wider improvements
The Delphi Method

- A consensus-forming tool, commonly used in a range of clinical situations e.g. formation of guidelines

- Distribution of questionnaires or surveys through a number of iterations

Thangaratinam S, 2005
Pre-Delphi

• Review of international sepsis guidelines and literature
• Long-list of possible bundle components developed until saturation
• 27 guidelines, 71 manuscripts

Delphi – Round 1

• 1st online survey – to practitioner panel
• Score potential components from long-list on importance and feasibility in a health centre and hospital setting
• 143 practitioners from 34 countries

Delphi – Round 2

• 2nd online survey – to expert panel
• Expert panel – consideration of same components to triangulate answers
• 11 experts

Delphi – Round 3

• 3rd online survey – to all participants
• Feedback with results from both round, asked if agree with final items
• 66 participants in total
Administer antibiotics early
Obtain venous access
Administer Intravenous Fluid
Identify and remove the underlying source of infection
Ensure appropriate location for care (e.g. referral to hospital or HDU)
Round 1

Monitoring Items in a Health Centre

- **a** Blood Pressure (Systolic/Diastolic using sphygmomanometer)
- **b** Respiratory Rate & Heart Rate (using watch)
- **c** Urine Output (by catheter)
- **d** Conscious Level
- **e** Temperature (using thermometer)
- **f** Monitoring and treatment of baby if appropriate
## Round 2

### Treatment Importance

<table>
<thead>
<tr>
<th>Practitioner Panel</th>
<th>Rank</th>
<th>Expert Panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotics</td>
<td>1</td>
<td>Antibiotics</td>
</tr>
<tr>
<td>IV Access</td>
<td>2</td>
<td>IV Access</td>
</tr>
<tr>
<td>IV Fluids</td>
<td>3</td>
<td>IV Fluids</td>
</tr>
<tr>
<td>Source Control</td>
<td>4</td>
<td>Source Control</td>
</tr>
<tr>
<td>Location</td>
<td>5</td>
<td>Location</td>
</tr>
<tr>
<td>Blood Transfusion</td>
<td>6</td>
<td>Tetanus</td>
</tr>
</tbody>
</table>

### Monitoring Importance

<table>
<thead>
<tr>
<th>Practitioner Panel</th>
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<th>Expert Panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Pressure</td>
<td>1</td>
<td>RR &amp; HR</td>
</tr>
<tr>
<td>RR &amp; HR</td>
<td>2</td>
<td>Conscious Level</td>
</tr>
<tr>
<td>Urine Output</td>
<td>3</td>
<td>Urine Output</td>
</tr>
<tr>
<td>Conscious Level</td>
<td>4</td>
<td>Monitoring of Baby</td>
</tr>
<tr>
<td>Temperature</td>
<td>5</td>
<td>Blood Pressure</td>
</tr>
<tr>
<td>Monitoring of Baby</td>
<td>6</td>
<td>Temperature</td>
</tr>
</tbody>
</table>
FAST-M Bundle

- Fluids
- Antibiotics
- Source – identify and control
- Transport – right facility and level of care
- Monitor
  - Mother – (RR/Consciousness/BP/HR/Temp)
  - Baby/Neonate
Bundle Development Overview

**Bundle Development**
- Evidence gathering and evaluation
- International consensus on initial contents
- Broad team of stakeholders from LMIC

**Operationalisation**
- In-country meeting – May 2016
- MOH and grassroots input
- Toolkit design
- Implementation strategy

**Feasibility Study**
Pilot sites – Malawi (3 hubs, 15 sites)
Evaluation of clinical outcomes and process measures
Interviews with clinicians & bundle optimisation
- Mixed methods analysis

**Clinical Trial**
- Multi-country cluster randomised clinical trial
- Demonstrate clinical and cost effectiveness at scale
Thank you

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