Applicability of the WHO Maternal Near Miss Approach in Low and Middle Income Countries

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Background

- Studying maternal near miss has been recognised as an useful means to improve the quality of obstetric care, particularly in low and middle income countries (LMICs)

- Through evidence synthesis, consultation and validation studies, the World Health Organization (WHO) has developed a maternal near-miss definition, and has established an approach for identifying and managing maternal near miss
Near Miss: Definition

A woman who nearly died but survived a complication that occurred during pregnancy, childbirth or during 42 days of termination of pregnancy.

Say et al., 2009
# Near Miss: Identification Criteria

<table>
<thead>
<tr>
<th>Dysfunctional system</th>
<th>Clinical criteria</th>
<th>Laboratory markers</th>
<th>Management based proxies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>( ) Shock</td>
<td>( ) pH&lt;7.1</td>
<td>( ) Use of continuous vasoactive drugs</td>
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<tr>
<td></td>
<td>( ) Cardiac arrest</td>
<td>( ) Lactate&gt; 5</td>
<td>( ) Cardio-pulmonary resuscitation</td>
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<tr>
<td>Respiratory</td>
<td>( ) Acute cyanosis</td>
<td>( ) Oxygen saturation &lt; 90% for ≥ 60 minutes</td>
<td>( ) Intubation and ventilation not related to anaesthesia</td>
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<td></td>
<td>( ) Gasping</td>
<td>( ) PaO2 / FiO2&lt;200 mmHg</td>
<td></td>
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<tr>
<td></td>
<td>( ) Respiratory rate &gt;40 or &lt;6 bpm</td>
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<tr>
<td>Renal</td>
<td>( ) Oliguria non responsive to fluids or diuretics</td>
<td>( ) Creatinine ≥300μmol/l or ≥3.5 mg/dL</td>
<td>( ) Dialysis for acute renal failure</td>
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<tr>
<td>Haematologic/Coagulation</td>
<td>( ) Failure to form clots</td>
<td>( ) Acute severe thrombocytopenia (&lt;50,000 platelets)</td>
<td>( ) Transfusion of ≥ 5 units of blood / red cells</td>
</tr>
<tr>
<td>Hepatic</td>
<td>( ) Jaundice in the presence of preeclampsia</td>
<td>( ) Bilirubin&gt;100 μmol/l or &gt;6.0 mg/dL</td>
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<tr>
<td>Neurologic</td>
<td>( ) Any loss of consciousness not medically induced lasting &gt;6h</td>
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<tr>
<td></td>
<td>( ) Stroke</td>
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<td></td>
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<tr>
<td></td>
<td>( ) Uncontrollable fit / status epilepticus</td>
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<td></td>
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<tr>
<td></td>
<td>( ) Total paralysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative severity proxy</td>
<td></td>
<td></td>
<td>( ) Hysterectomy following infection or haemorrhage</td>
</tr>
</tbody>
</table>
Study Objective

- To examine the applicability of the WHO Maternal Near Miss Approach in LMICs by focusing on the reported strengths and challenges
- To identify areas of possible revisions, clarifications and/or modifications to the existing criteria and document
Methods

- Systematic search of Pub Med and EMBASE and review of grey literature sources
- No language restriction
- Articles between 2009 to October 2015 were included if they used the WHO Maternal Near Miss Approach in LMICs and discussed implications of applying the NM criteria
- LMICs defined according to World Bank criteria
Results

- 28 papers met inclusion criteria
- 18 (64%) of the studies were prospective and 10 (36%) were retrospective
- Most studies occurred at district, tertiary or referral hospitals
Results

Strengths

- The WHO Near Miss Approach performed well in the systematic identification of near miss.
- Most studies found that the criteria were feasible and easy to use.
- Able to identify the most severe cases when compared to other identification criteria.
- Highlighted deficiencies in care and resource needs.
**Results**

**Challenges**

- Availability and timeliness of laboratory investigations
- Lack of therapeutic resources
- Loss of information due to incomplete medical records
- Difficulty in recognising clinical criteria
- Different interpretations of clinical criteria
Results
Challenges

- Blood transfusion highlighted as a particularly challenging indicator
- Revisions to lab investigations based on availability
- Need to separate between near miss cases upon arrival to hospital from those that develop in hospital
- Clarity around the level of facility that the Near Miss Approach can be used at
Anonymous, online survey of 73 stakeholders conducted by the WHO between December 2014 and January 2015

- Feasibility of the WHO criteria (67%)
- Applicability of clinical criteria (79.5%)
- Applicability of lab criteria (46.6%)
- Applicability of management criteria (72.6%)
- Applicability at different levels of facilities
- Lack of information systems
- Lack of human and physical resources
- Modify indicators based on level of facility and need
Conclusions

- Application of the WHO Maternal Near Miss Approach identifies opportunities to improve care

- Consideration should be given to local context and availability of resources and proposed revisions to the existing criteria would take these into account

- Clarity is needed around certain indicators and their definitions