A Model to Reduce Maternal and Fetal Mortality in 10 Hospitals in Kano and Kaduna State, Nigeria

Continuously Conducted Quality Assurance in Obstetrics

Wolfgang Künzel\textsuperscript{1}, Hadiza Galadanci \textsuperscript{2}, Oladapo Shittu \textsuperscript{3}, Robert Zinser \textsuperscript{4}, Manfred Gruhl \textsuperscript{4}

\textsuperscript{1}Dept. Ob/Gyn University Giessen, \textsuperscript{2}Amino Kano TH, Nigeria, \textsuperscript{3}TH Zaria, \textsuperscript{4}Rotary International
A Model to Reduce Maternal and Fetal Mortality by Quality assurance:

1. Background

- Millenium Development Goal 4: Reduce infant mortality 75% by 2015
- Millenium Development Goal 5: Reduce maternal mortality 75% by 2015
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance


<table>
<thead>
<tr>
<th>Mothers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal mortality ratio per 100,000 live births</td>
</tr>
<tr>
<td>Annual number of maternal deaths</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Babies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stillbirth rate per 1,000 total birth</td>
</tr>
<tr>
<td>Annual number of stillbirth</td>
</tr>
<tr>
<td>Neonatal mortality rate per 1,000 live births</td>
</tr>
<tr>
<td>Annual number of neonatal deaths</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 5 mortality rate per 1,000 live births</td>
</tr>
<tr>
<td>Neonatal mortality as % of under 5 Mortality</td>
</tr>
</tbody>
</table>
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

How to reduce Maternal and Fetal Mortality?
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

The only way to achieve this goal:

Quality assurance in obstetrical service

Main focus:
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

2. Principles of Quality assurance

- Quality of structure
- Quality of process
- Quality of outcome
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

2. Principles of Quality assurance

Quality goals in obstetrical service

Quality of structure
- Hospital building, equipment, number of staff, service level

Quality of process
- Trained and experienced personnel and professional performance

Quality of outcome
- Maternal and fetal morbidity and mortality
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

3. Selection of Hospitals in Kano and Kaduna State

- General Hospital, Bichi
- General Hospital, Danbatta
- Cottage Hospital, Dawakin-Tofa
- General Hospital Gaya
- Cottage Hospital, Kabo
- General Hospital, Kura
- Murtala Mohammed Spec. Hospital, Kano
- General Hospital, Rano
- Cottage Hospital, Tudun Wada
- General Hospital, Wudil
- Takai Community Health Care Centre
- General Hospital, Tudun Wada
- General Hospital Takai
- General Hospital Sumaila
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

3. Selection of Hospitals in Kano and Kaduna State

<table>
<thead>
<tr>
<th>Hospital Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yusufu Dan Tsoho Hospital</td>
<td>Kaduna</td>
</tr>
<tr>
<td>General Hospital, Idon</td>
<td></td>
</tr>
<tr>
<td>General Hospital, Kachia</td>
<td></td>
</tr>
<tr>
<td>General Hospital, Kagarko</td>
<td></td>
</tr>
<tr>
<td>Rural Hospital, Zonkwa</td>
<td></td>
</tr>
<tr>
<td>General Hospital, Zango</td>
<td></td>
</tr>
<tr>
<td>Rural Hospital, Kaura</td>
<td></td>
</tr>
<tr>
<td>General Hospital, Kafanchan</td>
<td></td>
</tr>
<tr>
<td>Rural Hospital, Kwoi</td>
<td></td>
</tr>
<tr>
<td>General Hospital, Gwantu</td>
<td></td>
</tr>
<tr>
<td>General Hospital, Birnin Gwari</td>
<td></td>
</tr>
<tr>
<td>General Hospital Makarfi</td>
<td></td>
</tr>
<tr>
<td>General Hospital, Ikara</td>
<td></td>
</tr>
<tr>
<td>Gambo Sawaba Hospital, Kofan Gaya Zaria</td>
<td></td>
</tr>
<tr>
<td>Rural Hospital, Maigana</td>
<td></td>
</tr>
<tr>
<td>General Hospital, Saminaka</td>
<td></td>
</tr>
<tr>
<td>Rural Hospital, Pambegwa</td>
<td></td>
</tr>
<tr>
<td>Rural Hospital, Hunkuyi</td>
<td></td>
</tr>
<tr>
<td>Rural Hospital, Doka</td>
<td></td>
</tr>
<tr>
<td>Baran Dirko</td>
<td></td>
</tr>
</tbody>
</table>
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4. Principles of quality assurance

4.1. Quality of Structure

- Condition of the delivery room
- Number of delivery beds
- Resuscitation unit for newborns
- Infusion systems
- Provision of caesarean section (distance)
- Operating theatre
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.1. Quality of Structure:

Some examples of Facility Audit
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.1. Quality of Structure: Some examples
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.1. Quality of Structure: Some examples of facility audit
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.1. Quality of Structure: Some examples of facility audit
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.1. Quality of Structure:
Some examples of facility audit

OP Impressions in S.
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.1. Quality of Structure: Some examples of facility audit
Improvement of Structure of Hospitals by Donations of Rotary International:

- 3 Ultrasound machines and training
- 10 Vacuumextractors
- 3 Operating tables
- 10 Delivery beds
- 10 Maternity record books
- Instruments for operating theatre
- Instruments for delivery rooms
- Mosquito nets for malaria prevention
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4. Principles of quality assurance

- 4.2. Quality of Process
  - Antenatal care and diagnostic measures
  - Management of delivery
    - Data recording
    - FHR observation
    - Premature rupture of membrane
    - Mode of delivery: VE, Forceps, CS
    - Post date pregnancy
    - Duration of labor
    - Counselling after delivery
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.2. Principles of quality assurance:
Quality of process – Maternity record book
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.2. Principles of quality assurance:

Quality of process – Maternity record book
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.3. Principles of quality assurance

Outcome quality

State of the **Mother** at delivery
- Severe illness
- Death

State of the **Newborn** at birth
- Apgar score
- Alive
- Death
Monthly report from each participating hospital about the following data:

Number of

deliveries (total)
premature birth (weight < 2500g)
instrumental deliveries: Forceps, VE
caesarean sections
severe haemorrhage during and after delivery
women with eclampsia
maternal death
fetal death
# A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

## 4.3. Principles of quality assurance – Quality of outcome by benchmarking

## Monthly Maternity statistics

<table>
<thead>
<tr>
<th>Hospital: Kano State</th>
<th>2nd Quarter</th>
<th>Rotary Intl. Project “Improvement of maternity Health”</th>
<th>Year: June, 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>ANC</td>
<td>ANC abortion</td>
<td>Deliveries</td>
</tr>
<tr>
<td>new</td>
<td>Follow up</td>
<td>MV A D/C</td>
<td>Total No. of deliveries</td>
</tr>
<tr>
<td>22</td>
<td>369</td>
<td>151 11 0</td>
<td>132</td>
</tr>
<tr>
<td>23</td>
<td>770</td>
<td>1275 13 1</td>
<td>160</td>
</tr>
<tr>
<td>24</td>
<td>286</td>
<td>241 5 3</td>
<td>44</td>
</tr>
<tr>
<td>25</td>
<td>357</td>
<td>386 10 0</td>
<td>41</td>
</tr>
<tr>
<td>26</td>
<td>773</td>
<td>1682 0 6</td>
<td>162</td>
</tr>
</tbody>
</table>
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.3. Principles of quality assurance – Quality of outcome by benchmarking
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.3. Principles of quality assurance – Quality of outcome by benchmarking

- Maternal Mortality
- Fetal Mortality
- Caesarean section rate
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.3. Principles of quality assurance – Quality of outcome by benchmarking
4.3. Principles of quality assurance –
Quality of outcome by benchmarking
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.3. Principles of quality assurance – Quality of outcome by benchmarking
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.3. Principles of quality assurance – Quality of outcome by benchmarking

Maternal Mortality in relation to number of deliveries

Maternal Mortality (%) vs. Deliveries per hospital (N)
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.3. Principles of quality assurance – Quality of outcome by benchmarking

![Graph showing fetal mortality by hospital codes. The graph compares fetal mortality rates across different hospital codes, highlighting hospital code 16.](image-url)
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.3. Principles of quality assurance – Quality of outcome by benchmarking
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.3. Principles of quality assurance –
Quality of outcome by benchmarking

Association between FMR and CS

Fetal Mortality Ratio (%) vs. Caesarean section (%)
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.3. Principles of quality assurance – Quality of outcome by benchmarking

Association of number of deliveries in hospital and fetal mortality

![Graph showing the association of number of deliveries in hospital and fetal mortality.](image-url)
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.3. Principles of quality assurance – Quality of outcome by benchmarking

- Foundation of an Institute of Quality Assurance
  - Continuous collection of quality indicators
  - Regular half-yearly meetings to exchange data and information
  - Set standards and improve standards

wolfgang.kuenzel@gyn.med.uni-giessen.de
Kaduna - Hospitals

Kano - Hospitals

Questionnaires

Central Institute of CIQA
Quality Assurance

Questionnaires
A Model to Reduce Maternal and Fetal Mortality by Quality Assurance

4.3. Principles of quality assurance – Quality of outcome by benchmarking -

Data processing and evaluation

1. Introduce (new) standards for Quality assurance

2. Analyse the progress in structure and performance

3. Assess and discuss the results and success of each hospital at regular meetings

4. Set standards and define new standards
Discussions and further planning among colleagues
A journey of a thousand miles must begin with a single step.

Lao-Tzu (604-531 BC), Chinese philosopher