Community Case Management of Pneumonia in Zambia: Factors Which Determine Rational Use of Antibiotics

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Pneumonia

Worldwide:

• Pneumonia is the leading cause of death of children.
• Responsible for approximately 1.2 million deaths of children under 5 each year.

In Zambia:

• In 2010, 14% of mortality of children under 5, equal to 6720 deaths.
Justification

• ICCM has great potential to reduce the burden of pneumonia, especially in hard to reach populations.

• Increasing levels of antibiotic resistance is of concern.

• Community health workers (CHWs) offer opportunity to improve rational use of antibiotics.

• Combat resistance **AND** maximise access.
Aim

To provide evidence on the rational use of antibiotics at the community level to inform further implementation of ICCM.

Objectives: to understand the factors that influence rational prescription and antibiotic use for management of pneumonia at community level.

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Study setting

ZAMBIA

LUAPULA PROVINCE

Kawambwa

Samfya
Study components

Cross-sectional study:

• Observation of CHW consultations (including video).

• Follow-up of all caregivers whose children were prescribed antibiotics during the observation period.

• Focus group discussions and key informant interviews with CHWs and caregivers.
Data collected

- **56** Caregiver interviews – conducted on day 6
- **1497** CHW consultations observed (6 weeks)
- **698** videos of respiratory rates recorded, measured and verified (IMCI/ICCM Master trainers identified by Child Health Unit)
- **9** CHW key informant interviews
- **6** FGDs with CHWs and caregivers
Preliminary findings: CHW observation

- **538 videos** included in analysis.
- 160 videos excluded: poor video quality, missing information or if child was unstable, crying or breastfeeding
- Mean no. of observations per CHW was **166**, ranging from 103 to 210
- Mean age of participants was **25.6 months**, range from 1 to 67 months
- Observations: **49.6%** male vs. **50.4%** female children
Comparison of respiratory rate counts

Children diagnosed with fast breathing (%)

<table>
<thead>
<tr>
<th>Age of child</th>
<th>CHW</th>
<th>Expert</th>
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</thead>
<tbody>
<tr>
<td>2-11 months</td>
<td>50.3</td>
<td>52.4</td>
</tr>
<tr>
<td>1-5 years</td>
<td>30</td>
<td>22.8</td>
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</tbody>
</table>
Respiratory rate counts continued…

- 68.2% and 54.1% of the CHW counts within 5 and 3 breaths of the expert count respectively.

- No significant difference between expert and CHW respiratory counts ($p = 0.1091$).
Classification of fast and normal breathing

Comparison of CHW and expert classification:
• 2-11 months: >50 breaths per minute
• 1-5 years: >40 breaths per minute

Cohen’s Kappa test: strong agreement between CHW and expert classification (0.6325 and 0.5155)

Sensitivity and specificity were similarly high:
• 2-11 months (74.2% and 83.1%)
• 1-5 years (80.5% and 82.8%)
CHW adherence to ICCM guidelines

Prescription of antibiotics:

• 202 children were prescribed antibiotics.
• 170 (84.2%) **correctly prescribed** according to CHW defined fast breathing
  
  2-11 months: 89.5% correctly prescribed
  1-5 years: 80.9% correctly prescribed

• Significant association between **CHW assessed fast breathing and receiving amoxicillin** ($p=0.01$)
CHW adherence to ICCM guidelines

As per CHW assessment;

• **90.7%** of children received appropriate treatment for their condition.
• Of all children with fast breathing, **89%** received an antibiotic.

Correct dose of antibiotics prescribed?

• **17** of the older children received the lower dose of amoxicillin.
• **3** of the younger children received the higher dose of amoxicillin intended for older children.
Appropriate treatment received

As per expert assessment (gold standard);

• 78% of children received appropriate treatment for their condition.

• Of all children with fast breathing, 75.3% received an antibiotic.
Learning

• **No significant difference** between expert and CHW respiratory count.

• **Strong** agreement between CHW and expert classification of fast breathing.

• **Majority** of children requiring antibiotics received them.

• Inappropriate use of antibiotics was **minimal**.
www.malariaconsortium.org

Thank you