

Kirstie Graham¹, Chomba Sinyangwe², Sarala Nicholas¹, Rebecca King³, Karin Kallander¹, Helen Counihan¹, James Tibenderana⁴, Mark Montague⁴, Samuel Mukupa², Sylvia Meek¹, Prudence Hamade¹

¹Malaria Consortium, UK; ²Malaria Consortium, Zambia; ³Nuffield Centre for International Health and Development, University of Leeds, UK; ⁴Malaria Consortium Africa, Uganda

Key messages

- CHWs are **capable** of assessing respiratory rate and prescribing appropriate treatment.
- Improved tools for **assessing respiratory rate** would strengthen rational use of antibiotics.
- A **three day** rather than five day course of antibiotics could improve caregiver adherence, reducing risk of drug resistance and cost, however, additional evidence is needed to support use of a short course of antibiotics for pneumonia in Africa.

Introduction

Community-based interventions for health, such as integrated community case management (iCCM), increase access to care and have potential to reduce child mortality by reaching marginalised populations. Through training, the use of effective clinical algorithms and active supervision, they offer an opportunity to improve rational use of antibiotics and limit the development of drug resistance in resource-poor settings. This study provides evidence on rational use of antibiotics for treatment of pneumonia symptoms to inform future implementation of iCCM, safeguarding effectiveness of current treatments whilst continuing to maximise access to care.



CHW in Zambia measures the respiratory rate of a child using a timer

Methods

1,497 CHWs' consultations were directly observed by non-clinical researchers in CHWs' usual place of work, with measurement of respiratory rate by CHWs recorded on video in 538 consultations. Videos were used by experts to conduct a retrospective gold standard assessment of respiratory rate. Caregivers whose children were prescribed antibiotics were followed up to assess adherence, through questionnaires and pill counts. Focus group discussions and key informant interviews were also conducted.

Results

CHWs:

- **65%** [55,74]* of antibiotics were correctly prescribed for **fast breathing** (suspected pneumonia).
- **74%** [69,79] of children received **appropriate treatment** (Fig 1).
- Qualitative data indicate that CHWs have a good understanding of pneumonia diagnosis and treatment, and although caregivers expected and sometimes applied pressure to receive drugs, CHWs' treatment decisions were not influenced.
- CHWs **adhered to guidelines** for **92%** [87,95] of children (Fig 2).

Caregivers:

- **66%** [50,79] of children completed full five day course of amoxicillin (pill count).
- Self-reported adherence is high for the correct number of doses given per day (**93%** [82,96]), but only **54%** [36,64] gave treatment three times a day for **five days**.
- Adherence for three times a day, for **three or more days** is far higher at **76%** [63,85].

*Numbers in brackets [x,x] indicate 95% confidence intervals

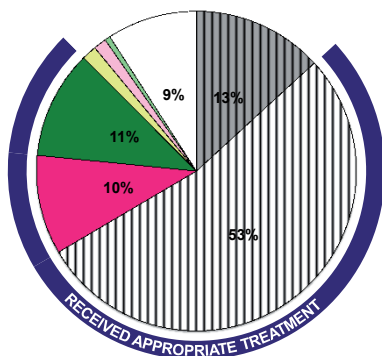


Fig 1: Children who received appropriate treatment as per gold standard assessment of respiratory rate

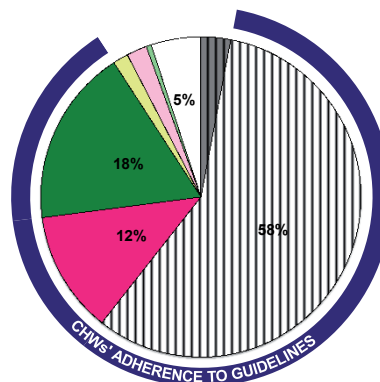


Fig 2: CHWs adherence to treatment guidelines as per their assessment of respiratory rate

Normal breathing:

- Antibiotics given
- No antibiotics given

Fast breathing:

- Correct dosage of amoxicillin (pink) given to children <12 months
- Correct dosage of amoxicillin (green) given to children ≥12 months
- Dosage of amoxicillin not specified
- Incorrect dosage of amoxicillin (pink) given to children ≥12 months
- Incorrect dosage of amoxicillin (green) given to children <12 months
- No antibiotics given

*Incorrect dosage could be due to stockouts. Stockouts not assessed as part of study

Acknowledgements

This study has been funded by UK aid from the UK government. However, the views expressed do not necessarily reflect the UK government's official policies. The authors thank all organisations and individuals who participated in and supported this project.