

# Cooking and pneumonia study

<b>Submission date</b> 28/06/2013	<b>Recruitment status</b> No longer recruiting	<input checked="" type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
<b>Registration date</b> 03/07/2013	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
<b>Last Edited</b> 20/12/2016	<b>Condition category</b> Respiratory	<input type="checkbox"/> Individual participant data

## Plain English summary of protocol

### Background and study aims

Malawi has one of the highest rates of death among infants and children under five years of age (69 and 110 per 1000 live births respectively in 2009). Pneumonia (lung disease) is the leading cause of death with around 298 per 1000 children under the age of 5 diagnosed with pneumonia every year and a death rate between 2.7 and 13.2 per 1000 children. Exposure to smoke produced when biomass fuels (animal or plant material) are burned in open fires is a major avoidable risk factor for pneumonia. In Malawi, where at least 95% of households depend on biomass as their main source of fuel, biomass smoke exposure is likely to be responsible for this disease. Efficient methods for reducing smoke exposure exist (e.g. ventilation, improved stoves, cleaner fuels, behaviour changes) but are out of reach for the majority due to many reasons that are mostly poverty related. The Global Alliance for Clean Cookstoves was launched in 2010 to tackle this issue. The main aim of the alliance is for 100 million homes to have clean and efficient stoves and fuels by 2020. However, there is very less evidence to know the potential benefits of such an approach. This study will test an efficient and locally acceptable advanced cookstove that reduces smoke emissions and thereby prevent pneumonia in children.

### Who can participate?

All households in included villages with children under the age of 4.5 years will be eligible to participate.

### What does the study involve?

Villages in these sites will be randomly allocated to one of two groups: intervention and control groups. Households in the intervention group will receive two advanced cookstoves to use (replacing open fires). Households in the control group will continue to cook in the traditional way. We will look for the occurrence of pneumonia, in children under the age of 5, over two years through health centres and through 3 monthly visits to the villages. In addition, we will study the levels of air pollution in households and exposure to air pollution in individuals in a small group of participants to understand how good the advanced cookstoves are. We will do further research to improve our understanding of how to get the most out of this method if this proves efficient in preventing pneumonia.

### What are the possible benefits and risks of participating?

The advanced cookstove is likely to be safer than the open fire since it contains the fire in a stable construction with outside surfaces that are cool to touch during use. All participating

villages will benefit from a mobile phone with airtime and guaranteed treatment of pneumonia in young children. Overall we expect participation in the study will reduce risks to participants. Households will be recruited from populations living in often poor conditions in Malawi who live with relatively high day-to-day risks. The open fire that households in the control group will continue to use is one contributor to these risks..

Where is the study run from?

The study will take place in two sites in Malawi (Chikhwawa and Chilumba).

When is the study starting and how long is it expected to run for?

The study will start in December 2013 and is expected to run till June 2016.

Who is funding the study?

The project is funded by the Joint Global Health Trials scheme that is funded by the Department for International Development (DfID) (UK), the Medical Research Council (MRC) (UK) and the Wellcome Trust (UK).

Who is the main contact?

Debbie Jenkins

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#### **Study website**

<http://www.capstudy.org>

## **Contact information**

#### **Type(s)**

Scientific

#### **Contact name**

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## **Additional identifiers**

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

## Secondary identifying numbers

N/A

# Study information

## Scientific Title

An advanced cookstove intervention to prevent pneumonia in children under 5 years old in Malawi: a cluster randomised controlled trial

## Acronym

CAPS

## Study objectives

An advanced cookstove intervention that substantially reduces biomass smoke exposure relative to an open fire will prevent pneumonia in children under 5 years old in Malawi.

## Ethics approval required

Old ethics approval format

## Ethics approval(s)

1. Liverpool School of Tropical Medicine Research Ethics Committee, 14/01/2013
2. Malawi College of Medicine Research and Ethics Committee (COMREC), 10/06/2013, ref. P.11/12/1308

## Study design

Village-level cluster randomised controlled open trial with two arms of equal size

## Primary study design

Interventional

## Secondary study design

Randomised controlled trial

## Study setting(s)

Other

## Study type(s)

Prevention

## Participant information sheet

Not available in web format, please use the contact details below to request a participant information sheet

## Health condition(s) or problem(s) studied

Pneumonia

## Interventions

The Philips fan assisted stove with user training (replacing open fires). The Philips stove is an advanced cookstove technology that incorporates a fan to improve combustion efficiency and substantially reduce smoke emissions. Intervention households will receive two of these

advanced cookstoves to replace their open fire. In the control arm there will be continuation of traditional cooking methods. Control households will be offered two Philips stoves at the end of their period of participation (2 years).

Randomisation will be by village-level cluster using a computer-generated randomisation schedule with stratification by site, accessibility (distance) of health centre and size.

### **Intervention Type**

Other

### **Phase**

Not Applicable

### **Primary outcome measure**

Primary outcome measure as of 01/07/2016:

Pneumonia episode rate is measured using the WHO IMCI pneumonia assessment protocol from baseline to two years follow up.

Original primary outcome measure:

Pneumonia in children under 5 years of age will be diagnosed by physicians, medical officers or other appropriately trained staff at local healthcare facilities, blinded to intervention allocation. The WHO IMCI pneumonia assessment protocol will be used to make the diagnosis since chest X-rays are not universally available in the study areas. Briefly, pneumonia is diagnosed using the IMCI protocol by the presence of cough or difficult breathing and signs of pneumonia - fast breathing (60, 50 or 40 breaths per minute or more in those <2 months, 2-12 months and 1-5 years respectively), chest in-drawing, stridor or any general danger sign (inability to drink or breastfeed, vomiting, convulsions, being lethargic or unconscious). Severe IMCI pneumonia is identified by the presence of any general danger sign, chest wall in-drawing or stridor in a calm child. Pneumonia episodes will be recorded over the full 2 years of follow up.

### **Secondary outcome measures**

Secondary outcome measures as of 01/07/2016:

1. Severe pneumonia rate is measured using the WHO IMCI pneumonia assessment protocol from baseline to two years follow up, oxygen saturation <90% and death from pneumonia
2. Death rate is measured through our serious adverse event reporting system supplemented by verbal autopsy when possible
3. Respiratory symptoms are measured using a questionnaire at 3 monthly follow up visits
4. Burns are measured using a questionnaire at 3 monthly follow up visits. Where burns meet seriousness criteria these are reported through our serious adverse event reporting system
5. Household air pollution is measured using a combination of questionnaire and air pollution monitoring assessments at various time points
6. Personal exposure to pollution is measured using a combination of questionnaire and air pollution monitoring assessments at various time points
7. Cookstove use is measured using a questionnaire at 3 monthly follow up visits with Stove Use Monitors as well in a sub set of households
8. Economic and health service evaluations are conducted using a range of economic and qualitative research methods

Original secondary outcome measure:

Severe pneumonia and death in children under 5 years of age. We will also assess respiratory symptoms and burns, household air pollution and personal exposure, measure cookstove use and conduct economic and health service evaluations.

**Overall study start date**

08/11/2012

**Completion date**

31/10/2016

## **Eligibility**

**Key inclusion criteria**

Children up to 4.5 years old

**Participant type(s)**

Patient

**Age group**

Child

**Lower age limit**

0 Years

**Upper age limit**

4.5 Years

**Sex**

Both

**Target number of participants**

150 village level clusters with approximately 10,000 children

**Key exclusion criteria**

Refusal to participate

**Date of first enrolment**

01/12/2013

**Date of final enrolment**

31/01/2016

## **Locations**

**Countries of recruitment**

Malawi

**Study participating centre**  
**Malawi Liverpool Wellcome (MLW) Trust**  
Blantyre  
Malawi  
-

**Study participating centre**  
**Malawi Epidemiology and Intervention Research Unit (MEIRU)**  
Chilumba  
Malawi  
-

## **Sponsor information**

**Organisation**  
Liverpool School of Tropical Medicine (UK)

**Sponsor details**  
Pembroke Place  
Liverpool  
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**Sponsor type**  
University/education

**ROR**  
<https://ror.org/03svjbs84>

## **Funder(s)**

**Funder type**  
Government

**Funder Name**  
The project is funded by the Joint Global Health Trials scheme (<http://www.mrc.ac.uk/Fundingopportunities/Calls/Jointghtrials/index.htm>) that is funded by the Department for International Development (DfID) (UK), the Medical Research Council (MRC) (UK) and the Wellcome Trust (UK) (Ref:100069/Z/12/Z).

# Results and Publications

## Publication and dissemination plan

Planned publication in a peer reviewed journal.

## Intention to publish date

31/12/2016

## Individual participant data (IPD) sharing plan

## IPD sharing plan summary

Data sharing statement to be made available at a later date

## Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Results article</a>	results	14/01/2017		Yes	No