# Hepcidin and Anaemia in Pregnancy (HAPn)

Submission date	Recruitment status  No longer recruiting	[X] Prospectively registered		
19/03/2014		[X] Protocol		
Registration date	Overall study status	Statistical analysis plan		
14/04/2014	Completed	[X] Results		
Last Edited	Condition category	[] Individual participant data		
15/10/2019	Pregnancy and Childbirth			

### Plain English summary of protocol

Background and study aims

Iron supplementation is recommended for all pregnant women in those places where anaemia (iron deficiency) rates exceed 40%. Recent studies show this can pose a risk to pregnant women. Therefore, there is a need to explore screen-and-treat options to minimise iron exposure during pregnancy. This can be done using an overall lower dosage of iron that would achieve similar results as the standard recommendation. However, we dont know how to best assess iron deficiency when infections are prevalent. The level of the hormone hepcidin is thought to indicate whether it is safe to receive iron. This initial study will lead to a larger study to find out if a screen-and-treat approach to iron supplementation using hepcidin levels will prevent anaemia at a lower iron dose, hence improving safety.

### Who can participate?

Pregnant women, 14 22 weeks into pregnancy, coming to participating Reproductive and Child Health Clinics (RCH) can take part.

### What does the study involve?

After taking an initial blood sample from the vein and assessing the age of their pregnancy, each participant is randomly allocated into one of the three study groups, to either receive: (a) UNICEF /WHO/UNU international multiple micronutrient preparation (UNIMMAP) containing 60 mg/day iron (reference group); (b) UNIMMAP containing 60 mg/day iron but based on a weekly hepcidin screening to tell if iron should be given for the next 7 days or not; (c) UNIMMAP containing 30 mg /day iron as in (b) for 12 weeks in rural Gambia. Each week, finger prick blood samples will be taken to find out the hepcidin level, haemoglobin (Hb) level and test for malaria. During the 12-week follow-up, additional blood samples are taken and side-effects and any other health issues are assessed. Although active participation finishes at the end of the supplementation period, a last investigation regarding pregnancy outcome will be made after delivery. This will include a postnatal check-up to monitor the mothers general condition after delivery and assessment of babies. All participants will be provided with long-lasting insecticide-treated nets (LLINs).

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

Benefits will include study participants having access to basic medical services for free. Participants will benefit from weekly monitoring by qualified field workers where anaemia can be detected. Malaria can also be diagnosed and managed. There are risks associated with a large intake of iron supplement. However, the reference group of this study takes iron as per standard

government practice and the other two groups take an overall lower dose of iron. This will decrease the risk of over dosage. If those in group (c) are moderately anaemic (borderline severe anaemia), they may be at risk of receiving too little iron but will be monitored every week and if seen to become severely anaemic, will be treated as per Gambia Government recommendation for management of severe anaemia. The UNIMMAP formulation has been used in other pregnancy studies in developing countries with good patient compliance and acceptability. No emergency is expected from taking this supplement. However, a study nurse will always be available who will decide whether to refer a participant to a health facility in case this is necessary.

Where is the study run from?

This study will be run from 12 communities in Jarra West and Kiang East of Rural Gambia.

When is the study starting and how long is it expected to run for? The study starts in April 2014 and will finish enrolment within about 1 year.

Who is funding the study? Medical Research Council (MRC) (UK) and the Bill & Melinda Gates Foundation (USA).

Who is the main contact? Mr Amat Bah Amat.Bah@lshtm.ac.uk

# **Contact information**

### Type(s)

Scientific

#### Contact name

Mr Amat Bah

### Contact details

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# Additional identifiers

**EudraCT/CTIS** number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers

SCC 1357v3

# Study information

### Scientific Title

A double-blind randomised controlled trial comparing standard dose of iron supplementation for pregnant women with two screen-and-treat approaches using hepcidin as a biomarker for ready and safe to receive iron

### Acronym

HAPn

### **Study objectives**

It is hypothesised that a screen-and-treat approach to iron supplementation will achieve similar efficacy in combating iron deficiency (ID) and iron deficiency anaemia (IDA) at a lower overall dosage of iron (with the assumption that this will improve safety and tolerability).

### Ethics approval required

Old ethics approval format

### Ethics approval(s)

The Gambia Government/MRC Joint Ethics Committee, 19/12/2013, ref. SCC 1357v3

### Study design

Proof-of-concept three-arm double-blind randomised controlled trial

### 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 patient information sheet

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

Anaemia in pregnancy

### Interventions

This study will involve 462 pregnant women between 14 and 22 weeks gestation over a period of 12 weeks randomly assigned (1:1:1 ratio) to either receive:

- 1. UNIMMAP containing 60 mg/day iron
- 2. UNIMMAP containing 60 mg/day iron but based on a weekly hepcidin screening indicating if iron can be given for the next 7 days or not
- 3. UNIMMAP containing 30 mg/day iron

### Intervention product

The nutritional supplement to be used in this trial is the UNICEF/WHO/UNU international multiple micronutrient preparation (UNIMMAP). All formulations also contain 400 ug folic acid and 14 other micronutrients. Three investigational products will be administered:

UNIMMAP with 60 mg iron
UNIMMAP with 30 mg iron
UNIMMAP with 0 mg iron (for when iron is not needed).

### Intervention Type

Drug

#### **Phase**

Not Applicable

### Drug/device/biological/vaccine name(s)

Hepcidin

### Primary outcome measure

Haemoglobin - defined as pregnancy stage adjusted haemoglobin at day 84

### Secondary outcome measures

- 1. Proportion of anaemia (Hb < 11 g/dl) at day 84
- 2. Iron deficiency prevalence at day 84
- 3. Iron deficiency anaemia (IDA) prevalence at day 84
- 4. Iron dosage
- 5. Beneficial and adverse events
- 6. Compliance

### Overall study start date

21/04/2014

### Completion date

21/03/2015

# **Eligibility**

### Key inclusion criteria

- 1. Pregnant (gestational age between 14 22 weeks)
- 2. Age: 18 to 45 years
- 3. Likely to be resident in study area for duration of trial
- 4. Written informed consent obtained

### Participant type(s)

Patient

#### Age group

Adult

### Lower age limit

### Sex

Female

### Target number of participants

462

### Total final enrolment

498

### Key exclusion criteria

- 1. Severely anaemic (< 7 g/dl)
- 2. Seriously ill (infectious disease of clinical significance) at recruitment
- 3. Chronic disease
- 4. Pregnancy complications (e.g. pre-eclampsia) at enrolment
- 5. Already part of another study

#### Date of first enrolment

21/04/2014

### Date of final enrolment

21/03/2015

## Locations

### Countries of recruitment

Gambia

# Study participating centre MRC International Nutrition Group

Banjul Gambia POBOX 273

# Sponsor information

### Organisation

The Medical Research Council (MRC) (UK)

### Sponsor details

c/o Professor Andrew M. Prentice Director MRC International Nutrition Group LSHTM Keppel Street London United Kingdom WC1E 7HT +44 (0)20 7636 8636 Andrew.Prentice@lshtm.ac.uk

### Sponsor type

Research council

### **ROR**

https://ror.org/03x94j517

# Funder(s)

## Funder type

Research council

### **Funder Name**

Medical Research Council (MRC) (UK) - International Nutrition Group

### Funder Name

Bill & Melinda Gates Foundation (USA)

# **Results and Publications**

# Publication and dissemination plan

Not provided at time of registration

Intention to publish date

Individual participant data (IPD) sharing plan

# IPD sharing plan summary

Not provided at time of registration

# **Study outputs**

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol article	protocol	13/07/2016		Yes	No
Results article	results	01/11/2019	15/10/2019	Yes	No