

Re-feeding of children with severe acute malnutrition

Submission date 24/08/2015	Recruitment status No longer recruiting	<input type="checkbox"/> Prospectively registered
		<input type="checkbox"/> Protocol
Registration date 02/09/2015	Overall study status Completed	<input type="checkbox"/> Statistical analysis plan
		<input checked="" type="checkbox"/> Results
Last Edited 20/12/2019	Condition category Nutritional, Metabolic, Endocrine	<input type="checkbox"/> Individual participant data

Plain English summary of protocol

Background and study aims

Severe acute malnutrition (SAM) is defined by the World Health Organisation (WHO) as a very low weight for height, an appearance of wasting away (wasting), or by the presence of nutritional oedema (swelling caused by a build-up of excess fluid in the body). When people are malnourished, the body's metabolism adapts to the lack of nutrients in order to survive, and levels of vitamins and minerals in the body go down. When starving people are re-fed, the body uses more of a mineral called phosphate, as this is needed for turning sugars in the diet into energy. If they are given diets with too much energy too soon then levels of phosphate in the body can become dangerously low as they are used up (re-feeding hypophosphataemia), which can be seriously damaging to health. Special diets have now been introduced which are fortified with phosphates in order to try to prevent re-feeding hypophosphataemia, but the effects of this have not been fully investigated. This study aims to monitor the amount of phosphorus in the blood plasma (P-phosphate) in children being treated for SAM during the re-feeding programme.

Who can participate?

Children admitted to Mwanamugimu Nutrition Unit (Uganda) with signs of SAM.

What does the study involve?

Children who are receiving treatment as an in-patient for SAM are given a therapeutic milk diet. The children are started on Formula 75 (F-75), which includes 75 calories per 100 ml. The F-75 therapeutic milk has been designed to meet the child's needs without overwhelming the body's systems at the start of treatment. The children are then moved onto Formula 100 (F-100) which contains 100 calories per 100 ml. The amount of P-phosphate is measured on admission, at the second day of treatment, at the start of the F-100 treatment, two days later and then at discharge.

What are the possible benefits and risks of participating?

The main benefit of participating in the study is the improved care provided. There are no risks of participating in the study.

Where is the study run from?
Mwanamugimu Nutrition Unit (Uganda)

When is the study starting and how long is it expected to run for?
October 2012 to May 2013

Who is funding the study?

1. University of Copenhagen (Denmark)
2. Augustinus Fonden (Denmark)
3. Lundbeckfonden (Denmark)
4. Brødrene Hartmanns Foundation (Denmark)
5. Arvid Nielsens Foundation (Denmark)
6. Axel Muusfeldts Foundation (Denmark)
7. Aase and Einar Danielsens Foundation (Denmark)
8. Torkild Steenbecks Scholarship (Denmark)

Who is the main contact?
Professor Henrik Friis

Contact information

Type(s)
Scientific

Contact name
Prof Henrik Friis

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Additional identifiers

Protocol serial number
N/A

Study information

Scientific Title
Re-feeding of children hospitalized with severe acute malnutrition: an observational study from Mwanamugimu Nutrition Unit, Uganda

Acronym
FeedSAM

Study objectives

The underlying study hypothesis is that children with severe acute malnutrition (SAM) have derangement of phosphorus and other electrolytes, and that these are not adequately corrected by current treatment, and hence delay or prevent recovery of nutritional status and essential body functions.

Primary objective: To assess changes in serum phosphate during treatment of children with SAM with therapeutic milk.

Secondary objectives: To assess changes in and/or predictors of anthropometry, clinical characteristics, child development and physical activity, blood essential fatty acids, immune factors, gut permeability and flora, heart function, and mortality.

Ethics approval required

Old ethics approval format

Ethics approval(s)

1. Research Ethics Committee Makerere University (Uganda), 08/08/2012, ref: 2012-134
2. The National Committee on Health and Research Ethics (Denmark), 20/08/2012, ref: 1208653

Study design

Single-centre observational cohort study with nested cross-sectional study

Primary study design

Observational

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Severe acute malnutrition (SAM) in children

Interventions

There was no experimental intervention. All study participants received in-patient treatment for complicated severe acute malnutrition according to standard protocols based on international guidelines. Uganda follows the approach stated in the Integrated Management for Acute Malnutrition. The treatment is based on therapeutic milk diets (F-75 and F-100) to children hospitalized with SAM, and treating medical complications. A child is considered to have SAM if it has either weight for height (W/H) below the -3 standard deviations (SD) or mid upper arm circumference (MUAC) below the cut-off points for SAM or pitting oedema developing from both feet. In accordance with treatment guidelines, the duration of treatment with F-75 and F-100, and hence the follow-up time points, depended on the treatment response.

Intervention Type

Other

Primary outcome(s)

Plasma phosphate was measured at five time points: on admission, the second day of treatment, the start of the transition to F-100, day two of transition and at discharge.

Key secondary outcome(s))

1. Blood essential fatty acids at admission, transition, discharge, 8 weeks, 16 weeks
2. Physical activity using accelerometers at discharge
3. Child development using the Malawi Development assessment tool at admission, transition, discharge, 8 weeks, 16 weeks
4. Thymus size using ultrasound at admission, discharge and week 8)
5. T-cell subsets and cytokines using flow cytometry at admission and discharge
6. Gut permeability (LM-test) at admission and discharge
7. Gut flora and pathogens at admission and discharge
8. Myocardial function and biomarkers at admission and discharge
9. Mortality during admission

Completion date

01/05/2013

Eligibility

Key inclusion criteria

1. Children between 6 - 59 months of age
2. Admitted to Mwanamugimu Nutrition Unit paediatric wards with either:
 - 2.1 Weight for height (W/H) below the -3 standard deviations (SD) and mid upper arm circumference (MUAC) below the cut-off points for SAM
 - 2.2. Pitting oedema developing from both feet
3. Living near the study centre

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Child

Lower age limit

6 months

Upper age limit

59 months

Sex

All

Total final enrolment

120

Key exclusion criteria

1. Children with shock, severe respiratory difficulty or significant bleeding at the time of admission
2. Weight below 4.5 kg at admission
3. Very severe anaemia

Date of first enrolment

10/10/2012

Date of final enrolment

21/02/2013

Locations

Countries of recruitment

Uganda

Study participating centre

Mwanamugimu Nutrition Unit

Department of Paediatrics and Child Health

Kampala

Uganda

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Sponsor information

Organisation

University of Copenhagen (Denmark)

ROR

<https://ror.org/035b05819>

Funder(s)

Funder type

University/education

Funder Name

Københavns Universitet

Alternative Name(s)

university_of_copenhagen, Københavns Universitet - University of Copenhagen, University of Copenhagen (UCPH), Copenhagen University, Københavns Universitet – Københavns Universitet, University of Copenhagen (KU), Denmark, Københavns Universitet – University of Copenhagen (UCPH), koebenhavns_uni, Københavns Uni, University of Copenhagen, KU, UCPH

Funding Body Type

Government organisation

Funding Body Subtype

Universities (academic only)

Location

Denmark

Funder Name

Augustinus Fonden

Alternative Name(s)

Augustinus Foundation

Funding Body Type

Private sector organisation

Funding Body Subtype

Trusts, charities, foundations (both public and private)

Location

Denmark

Funder Name

Lundbeckfonden

Alternative Name(s)

Lundbeckfonden, The Lundbeck Foundation

Funding Body Type

Private sector organisation

Funding Body Subtype

Trusts, charities, foundations (both public and private)

Location

Denmark

Funder Name

Brødrene Hartmanns Foundation

Funder Name

Arvid Nielsens Foundation

Funder Name

Axel Muusfeldts Foundation

Funder Name

Aase and Einar Danielsens Foundation

Funder Name

Torkild Steenbecks Scholarship

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	01/02/2016		Yes	No
Results article	results	01/02/2017		Yes	No
Results article	results	14/03/2017	20/12/2019	Yes	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes