

# Design and validation of a fasting mimicking diet

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<b>Registration date</b> 17/05/2017	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
<b>Last Edited</b> 26/05/2020	<b>Condition category</b> Signs and Symptoms	<input type="checkbox"/> Individual participant data

## Plain English summary of protocol

### Background and study aims

Critical illness is a state in which patients depend on drugs or machines to support or replace organ function to keep them alive and allow them to heal. Such patients are admitted to intensive care units (ICU) to receive care. Critically ill patients are at risk of losing muscle power due to the natural breakdown of tissue from inactivity. Short term fasting may be beneficial in the recovery of disease. Even in ICU, withholding intravenous nutrition (nutrition delivered through a drip) for one week, surprisingly, avoids complications and allows severely ill patients to recover faster and go home earlier. This study is aiming to see if these beneficial effects can be broadened beyond the first week of critical illness. The aim of this study is to design a new fasting mimicking diet in ICU (ICU-FM) based on cyclic feeding interruptions and look at its effects.

### Who can participate?

Adult patients in ICU who are unable to eat by mouth.

### What does the study involve?

Participants are randomly allocated to undergo 12 hours of receiving nutrition through a drip or straight into the gut followed by 12 hours of fasting, or 12 hours of fasting followed by 12 hours of receiving nutrition through a drip or straight into the gut. If the 12 hour time period is judged to be insufficient, then the process is repeated using 24 hour time periods. At the start of the study and then after 12 or 24 hours (depending on the time period used), participants have samples of blood collected to assess their health. In addition, participants have their medical records reviewed after 7 and 90 days to assess survival rates.

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

There are no direct benefits or risks involved with participating.

### Where is the study run from?

UZ Leuven (Belgium)

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

June 2016 to October 2017

Who is funding the study?

1. KU Leuven (Belgium)
2. Flanders Government FWO (Belgium)

Who is the main contact?

Dr Michael P. Casaer  
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## Contact information

### Type(s)

Scientific

### Contact name

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## Additional identifiers

### Protocol serial number

ICU-FM-I-2016-1-1-2

## Study information

### Scientific Title

ICU-FM: Implementation into the intensive care unit (ICU) of the beneficial effects of fasting (mimicking diets) (FM)

### Acronym

ICU-FM-I

### Study objectives

Twelve hours of nutrient restriction are sufficient to provoke a metabolic fasting response in critically ill patients, as reflected by increased plasma bilirubin and decreased insulin requirements.

### Ethics approval required

Old ethics approval format

## **Ethics approval(s)**

Commissie Medische Ethiek UZ KU Leuven , 27/07/2016, ref: B322201629914

## **Study design**

Pilot randomised cross-over study

## **Primary study design**

Interventional

## **Study type(s)**

Treatment

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

Prolonged critical illness

## **Interventions**

Participants are randomised by central computer in permuted blocks (size unknown to all involved) in a 1:1 ratio to either the 12/12 (or 24/24 if 12 hours would be not sufficient) caloric restriction (CR) regime followed by feeding or feeding followed by CR. All outcome assessors will be blinded for treatment allocation.

Nutritional targets will be achieved by EN±PN, as appropriate with a full feeding target of 20-25 kcal/kg ideal body weight, a dosage defined by age (< or > 60 years) and gender. During fasting intervals, no nutrition will be administered, unless spontaneous hypoglycemia occurs. The intervention is thus to infuse enteral and/or parenteral nutrition as required to achieve nutritional target during a 12 hours (or in phase 2: 24 hours) interval on ICU day 8. This is followed by a 12 hours or 24 hours fasting. The sequence of this metabolic cross over experiment is determined by randomization.

Plasma bilirubin, creatinine, BUN and glucose values and insulin requirements will be collected at study start, after the fasting window and after full feeding. Blood samples for evaluation of other changes in metabolism and cellular biology will be drawn likewise before and after the feeding and fasting interval.

## **Intervention Type**

Other

## **Primary outcome(s)**

1. Plasma bilirubin is measured by colorimetric assay in the Laboratory of Intensive Care Medicine at baseline and after the first and second intervention time window (12 hours or 24 hours according to the study phase)
2. Insulin requirements (total dose delivered over intervention time interval, this is the last 12 hours or 24 hours according to the study phase) are measured by reviewing the ICU-PDMS (Patient Data Management System [Metavision]) at baseline and after the first and the second intervention time window (this is after 12 hours and 24 hours in the first phase and eventually after 24 hours and 48 hours in the second phase of the study)

## **Key secondary outcome(s)**

1. Mortality is measured using data from the National Registry via Hospital Clinical Work Station (KWS) at 90 days
2. New ICU-Morbidity occurring in the first week after randomization is assessed by reviewing the ICU-PDMS (Patient Data Management System [Metavision]) at baseline and 7 days

**Completion date**

01/10/2017

## Eligibility

**Key inclusion criteria**

1. Adult ICU-patients
2. Unable to eat by mouth
3. Expected on day 7 to stay 3 more days in ICU

**Participant type(s)**

Patient

**Healthy volunteers allowed**

No

**Age group**

Adult

**Sex**

All

**Total final enrolment**

70

**Key exclusion criteria**

1. Patients with severe jaundice
2. Bilirubin > 5mg/dL, pregnant
3. Lactating patients

**Date of first enrolment**

01/06/2017

**Date of final enrolment**

01/10/2017

## Locations

**Countries of recruitment**

Belgium

**Study participating centre**

**UZ Leuven**

Clinical Department of Intensive Care Medicine  
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3000

## Sponsor information

**Organisation**

UZ Leuven

**ROR**

<https://ror.org/0424bsv16>

## Funder(s)

**Funder type**

Research organisation

**Funder Name**

KU Leuven

**Alternative Name(s)**

Katholieke Universiteit Leuven

**Funding Body Type**

Private sector organisation

**Funding Body Subtype**

Universities (academic only)

**Location**

Belgium

**Funder Name**

Flanders Government FWO

## Results and Publications

## Individual participant data (IPD) sharing plan

The participant level data of this step I pilot metabolic cross over clinical experiment will not be publicly available. This would be a potential source of erroneous findings due to inadequate interpretation of the study design. The data will be stored in the research database of the Clinical Department and Laboratory of Intensive Care Medicine and request for post-hoc analyses with a clearly defined research question and methodology can be sent to the investigators. This approach to avoid misinterpretation of complex data and databases has been proposed in a recent summit on data-sharing organized by the NEJM in April 2017.

## IPD sharing plan summary

Not expected to be made available

## Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Results article</a>	results	24/05/2020	26/05/2020	Yes	No
<a href="#">Study website</a>	Study website	11/11/2025	11/11/2025	No	Yes