

# Effect of postural change and mobilization on hemoglobin level in patients on the intensive care unit

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To measure a change in Hemoglobin levels upon a change in posture from supine to upright in ICU patients.

<b>Ethical review</b>	Approved WMO
<b>Status</b>	Recruiting
<b>Health condition type</b>	Anaemias nonhaemolytic and marrow depression
<b>Study type</b>	Observational invasive

## Summary

### ID

NL-OMON56917

### Source

ToetsingOnline

### Brief title

Effect of postural change on hemoglobin

### Condition

- Anaemias nonhaemolytic and marrow depression

### Synonym

Anemia

### Research involving

Human

### Sponsors and support

**Primary sponsor:** Deventer Ziekenhuis

**Source(s) of monetary or material Support:** Onderzoeksbudget van de IC

## Intervention

**Keyword:** Anemia, Hemoconcentration, Hemoglobin, Posture

## Outcome measures

### Primary outcome

The difference in hemoglobin level between upright and supine position in the same patient.

### Secondary outcome

Other study parameters are albumin and uric acid before and after mobilisation in chair.

## Study description

### Background summary

Monitoring hemoglobin levels is vital for identifying anemia causes in hospitalized patients. Changes in posture, as demonstrated by previous research can lead to significant shifts in hemoglobin concentrations, termed postural pseudoanemia. However, this phenomenon has not been studied in ICU patients. Many factors may affect hemoglobin concentrations in ICU patients, including plasma volume shifts, bleeding, blood loss from repeated phlebotomies, hemolysis, bone marrow suppression and functional iron deficiency. When this leads to significant anemia patients may be treated with red blood cell transfusions. However, these transfusions may be associated with adverse reactions and should only be performed for appropriate indications. If postural pseudoanemia occurs in ICU patients this could lead to patient harm through inadvertent red blood cell transfusions. The occurrence of postural pseudoanemia in ICU patients may differ from previous studies because patients are frequently immobilized for prolonged periods. This study aims to investigate whether postural changes affect hemoglobin in ICU-admitted patients. We hypothesize that significant hemoglobin shifts may occur, potentially leading to misinterpretations of anemia and unnecessary diagnostic workup. Understanding this impact can guide clinical practice and prevent unwarranted interventions.

### Study objective

To measure a change in Hemoglobin levels upon a change in posture from supine to upright in ICU patients.

## Study design

Intervention study

## Study burden and risks

The first blood sample, in supine position, at 06:00 is a routine sample, taken bij every patient admitted to the ICU.

Mobilisation in a chair is also routine, for every patient who can be mobilized.

The burden for patients participating in this study is the sampling of 2 times 8 ml of blood from the arterial line.

## Contacts

### Public

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Deventer 7416 SE  
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### Scientific

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## Trial sites

### Listed location countries

Netherlands

## Eligibility criteria

### Age

Adults (18-64 years)  
Elderly (65 years and older)

## Inclusion criteria

In order to be eligible to participate in this study, a subject must meet all of the following criteria:

- Age over 18 years, of any gender and ethnic background
- Admitted to the intensive care unit
- Able to give informed consent
- Patients with an arterial line as part of their treatment plan.
- Patients able to remain seated in chair for at least 30 minutes
- Patients able to remain supine overnight for at least 6 hours

## Exclusion criteria

A potential subject who meets any of the following criteria will be excluded from participation in this study:

- Delirium or inability to give informed consent
- Inability to understand written information in Dutch
- Patients on artificial ventilation
- Orotracheally intubated patients (spontaneous breathing through a tracheostomy cannula is allowed)
- Patients treated with noradrenaline  $> 0.05 \text{ ug/kg/min}$
- Patients treated with argipressin
- Patients who received a blood transfusion within 24 hours before measurements
- Patients who received  $> 3 \text{ L}$  of intravenous fluids within 24 hours before measurements
- Patients who received  $> 500 \text{ ml}$  of iv fluids within 4 hours of measurements
- Severe restlessness or inability to remain supine for 6 hours before initial blood sampling
- Patients being treated with diuretics
- Patients admitted with:
  - Decompensated right heart failure
  - Pulmonary hypertension
  - Pulmonary embolism
- Active bleeding or risk of  $>100 \text{ ml}$  blood loss
- Hematological disorder/malignancy

## Study design

## Design

**Study type:** Observational invasive

Masking: Open (masking not used)

Control: Uncontrolled

Primary purpose: Diagnostic

## Recruitment

NL

Recruitment status: Recruiting

Start date (anticipated): 25-07-2024

Enrollment: 25

Type: Actual

## Ethics review

Approved WMO

Date: 24-07-2024

Application type: First submission

Review commission: MEC-U: Medical Research Ethics Committees United (Nieuwegein)

## Study registrations

### Followed up by the following (possibly more current) registration

No registrations found.

### Other (possibly less up-to-date) registrations in this register

No registrations found.

### In other registers

**Register**

Other

CCMO

**ID**

ClinicalTrials.org, nummer nog niet bekend

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