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 in ICU patients.

Ethical review	Approved WMO
Status	Recruiting
Health condition type	Anaemias nonhaemolytic and marrow depression
Study type	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 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
Deventer Ziekenhuis

Nico Bolkesteinlaan 75
Deventer 7416 SE
NL
Scientific
Deventer Ziekenhuis

Nico Bolkesteinlaan 75
Deventer 7416 SE
NL

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 ug/kg/min
• Patients treated with argipressin
• Patients who received a blood transfusion within 24 hours before measurements
• Patients who received > 3 L of intravenous fluids within 24 hours before measurements
• Patients who received > 500 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 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	ID
Other	ClinicalTrials.org, nummer nog niet bekend
CCMO	NL86966.100.24