REstricted versus Liberal positive end*expiratory pressure in patients without Acute respiratory distress syndrome (RELAx) * a multicenter randomized controlled trial

Published: 28-07-2017
Last updated: 12-04-2024

To compare ventilation with PEEP titrated to the lowest possible PEEP level (restricted) with ventilation the currently practiced PEEP level (liberal) in intensive care patients without ARDS.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Lower respiratory tract disorders (excl obstruction and infection)
Study type	Interventional

Summary

ID

NL-OMON45335

Source
ToetsingOnline

Brief title
RELAx

Condition

- Lower respiratory tract disorders (excl obstruction and infection)

Synonym
respiratory insufficiency

Research involving
Human

Sponsors and support

Primary sponsor: Academisch Medisch Centrum
Source(s) of monetary or material Support: ZonMW

Intervention

Keyword: intensive care, mechanical ventilation, positive end-expiratory pressure

Outcome measures

Primary outcome

The primary endpoint is the number of ventilator*free days and alive at day 28

after ICU admission.

Secondary outcome

Secondary study parameters include:

* ICU length of stay (LOS), Hospital LOS

* ICU mortality, Hospital mortality, 90-day mortality

* Incidence of development ARDS

* Incidence of severe hypoxemia

* Incidence of severe atelectasis

* Rescue therapies for severe hypoxemia: recruitment maneuver, prone position

* Rescue therapies for severe atelectasis: bronchoscopy

* Incidence of hemodynamic compromise

* Incidence of pneumothorax

* Incidence of pneumonia

* Days with use of hemodynamic support

* Days with use of sedation

Study description

Background summary

While there is sufficient evidence from randomized controlled trials for benefit of positive end*expiratory pressure (PEEP) in intensive care unit (ICU) patients with acute respiratory distress syndrome (ARDS), evidence for benefit of PEEP in ICU patients without ARDS is absent. PEEP may even be harmful, as it could cause pulmonary overdistension and cardiac compromise.

Study objective

To compare ventilation with PEEP titrated to the lowest possible PEEP level (restricted) with ventilation the currently practiced PEEP level (liberal) in intensive care patients without ARDS.

Study design

National multicenter, non*inferiority, randomized controlled trial in intubated and ventilated adult intensive care patients without ARDS.

Intervention

Patients randomized to the restricted PEEP-arm are ventilated with the lowest possible PEEP level (0-5 cm H2O); patients randomized to the liberal PEEP-arm are ventilated with the currently practiced PEEP level (8 cm H2O). Patients will be randomly assigned in a 1:1 ratio the restricted PEEP-arm of the liberal PEEP-arm.

Study burden and risks

Burden and risk of the two ventilation strategies are uncertain. Ventilation with the lowest possible PEEP level could increase the risk of atelectasis and also the risk of potentially dangerous hypoxemia, while ventilation with the currently practiced PEEP level could increase the amount of overdistended lung tissue and increase hemodynamic compromise. Collection of data causes no harm for the patients.

Contacts

Public
Academisch Medisch Centrum

Meibergdreef 9
Amsterdam 1105AZ
NL
Scientific
Academisch Medisch Centrum

Meibergdreef 9
Amsterdam 1105AZ
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

* Admission to an ICU participating in this trial
* Need for invasive ventilation
* An expected duration of ventilation > 24 hours

Exclusion criteria

* Age less than 18 years
* Patient previously randomized in this RCT
* Patient participating in another RCT with the same endpoint or interventions possibly compromising this study outcome
* Patients with ongoing cardiac ischemia due to cardiac infarction and failed revascularization, patients with increased and uncontrollable intracranial pressure (of * 18 mmHg), patients with necrotizing fasciitis, and severe untreatable anemia such as in case of Jehovah*s Witnesses (as these patients can be considered to be vulnerable to the potentially dangerous hypoxemia which could develop more often, even for a short time, in the *restricted PEEP**arm of this trial)
* Patient with a clinical diagnosis of ARDS or possible ARDS with a PaO2/ FiO2 <200 mmHg

* Invasive ventilation longer than 12 hours directly preceding ICU admission
* Invasive ventilation longer than 1 hour before randomization
* Patients with suspected or confirmed pregnancy
* Patients with morbid obesity (body mass index > 40)
* Patients with GOLD classification III or IV chronic obstructive pulmonary disease (COPD)
* Patients with premorbid restrictive pulmonary disease (evidence of chronic interstitial infiltration on chest radiographs)
* Patients in whom pulse oximetry is known to be unreliable, e.g., patients with carbon monoxide poisoning
* Any neurologic diagnosis that can prolong duration of mechanical ventilation, e.g., patients with Guillain*Barré syndrome, high spinal cord lesion or amyotrophic lateral sclerosis, multiple sclerosis, or myasthenia gravis
* No informed consent

Study design

Design

Study type: Interventional

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	26-10-2017
Enrollment:	980
Type:	Actual

Ethics review

Approved WMO

Date:	28-07-2017
Application type:	First submission
Review commission:	METC Amsterdam UMC

Approved WMO

Date:	11-08-2017
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	16-10-2017
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	15-11-2017
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	11-12-2017
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	18-06-2018
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	26-10-2018
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	19-07-2019
Application type:	Amendment
Review commission:	METC Amsterdam UMC
Approved WMO Date:	10-12-2019
Application type:	Amendment
Review commission:	METC Amsterdam UMC

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
CCMO	NL60402.018.17