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Cost-Utility Analysis of lower or higher oxygenation targets for Acute Hypoxemic Respiratory Failure

A registry-based secondary analysis of the randomised Hot-ICU Trial

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Introduction and Objectives

Patients in the intensive care unit (ICU) with hypoxemic respiratory failure receive supplemental oxygen.

In the Handling Oxygenation Targets in the ICU (HOT-ICU) trial such patients were allocated to a lower target of partial pressure of arterial oxygen (PaO2) of 8 kPa versus a higher PaO2 target of 12 kPa.

The objectives of this study were to evaluate health care resource use, associated costs, labour market participation, and quality-adjusted life years (QALYs) at one year after randomisation.

Data

Two sources:

- The Danish administrative registry patient-level data
- Clinical patient-level outcome measures collected through the HOT-ICU trial

Registries

- The National Health Registry
  - ✓ Secondary sector
- The Danish Psychiatric Central Research Registry
  - ✓ Psychiatric hospitals
- The National Health Service Registry
  - ✓ Primary health care
- Elderly Indicators
  - ✓ Home care and home nursing
- The Danish National Prescription Registry
  - ✓ Home care and home nursing
- Danish Rational Economic Agents Model (DREAM)
  - ✓ Home care and home nursing

Methods

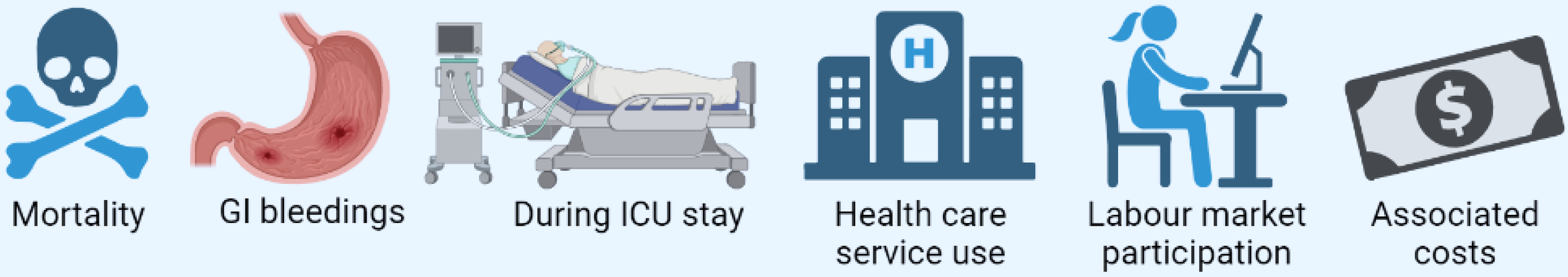
- A cost-utility analysis based on Danish registry data was performed with a time horizon of one year after randomisation in the HOT-ICU trial.
- The registry data provided information on health service use and associated costs. QALYs were calculated based on the EuroQol five-dimension five-level (EQ-5D-5L) questionnaire.
- The registries and QALYs combined give an insight into the long-term (one-year) economic aspects of different oxygenation targets during ICU stay.
- In total, 2,282 Danish patients were included in the trial (1,143 allocated to the lower and 1,139 to the higher oxygenation target group). We obtained access to data from somatic hospitals for a subsample of 186 patients, making this study a pilot analysis of the one-year outcomes associated with HOT-ICU.

Results

- The highest cost category was somatic hospital stays.
- No differences in one-year costs or QALY gains
- Lower oxygenation target
  - ✓decreased number of bed days in somatic hospitals
  - ✓increased number of people in employment

Partial pressure of arterial oxygen (PaO2) of

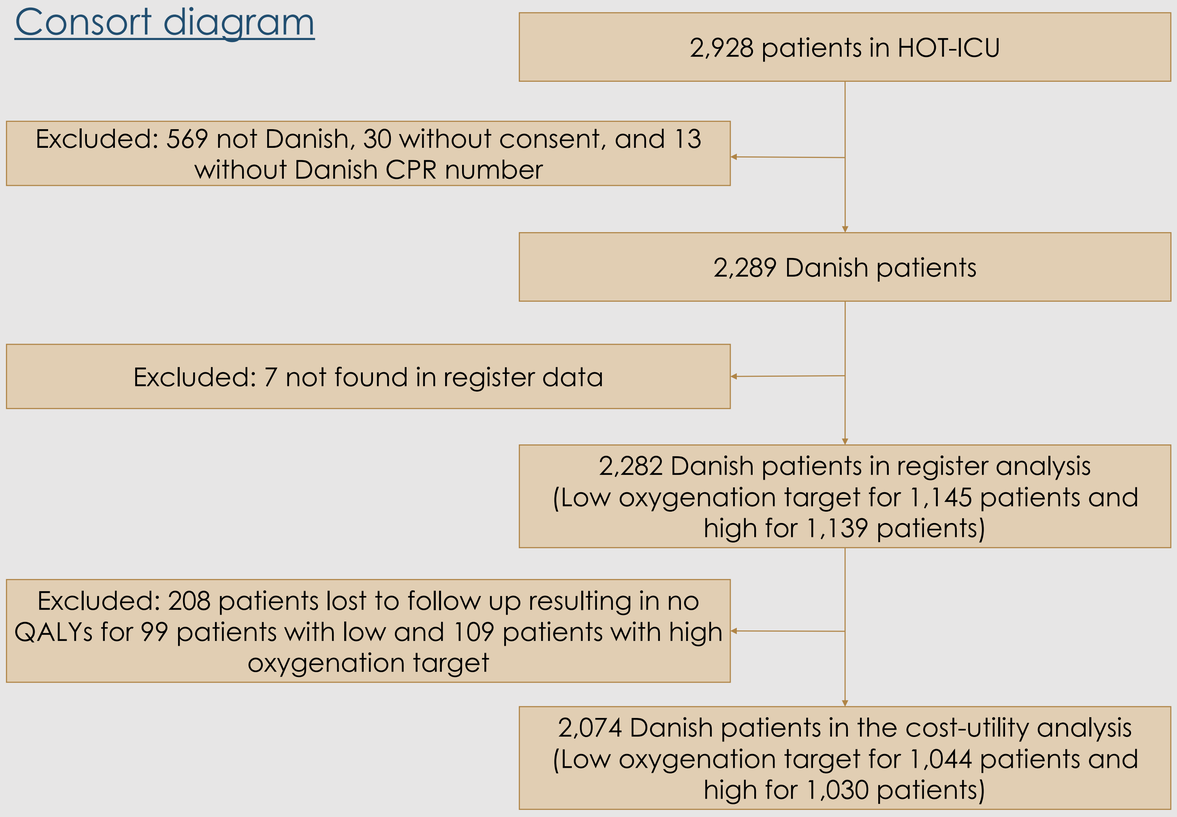
8 kPa versus 12 kPa



Conclusion

In these preliminary analyses, targeting lower vs. higher oxygenation in ICU patients with acute hypoxemic respiratory failure did not result in QALY differences or one-year cost differences.

Consort diagram



References

1. Halling, C (2022) Economic Evaluations Alongside Randomised Trials - Research from and Intensive Care Units & Specialised Palliative Care Teams, *PhD Thesis, University of Southern Denmark, Denmark*
2. Schjørring OL, et al. (2019) Handling Oxygenation Targets in the Intensive Care Unit (HOT-ICU)—Protocol for a randomised clinical trial comparing a lower vs a higher oxygenation target in adults with acute hypoxaemic respiratory failure. *Acta Anaesthesiol Scand ;63(7):956-965.*
3. Chu DK et al. (2018) Mortality and morbidity in acutely ill adults treated with liberal versus conservative oxygen therapy (IOTA): a systematic review and meta-analysis. *Lancet ;391(10131):1693-1705.*
4. Schjørring OL et al. (2021) Lower or Higher Oxygenation Targets for Acute Hypoxemic Respiratory Failure. *N Engl J Med ;384(14):1301-1311.*
5. Schjorring OL et al. (2020) The handling oxygenation targets in the intensive care unit (HOT-ICU) trial: Detailed statistical analysis plan. *Acta Anaesthesiol Scand;64(6):847-856.*

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