



EVIDENCE SYNTHESIS
IRELAND



Cochrane
Ireland

Evidence Synthesis Ireland Fellowship Scheme

Review Identification Form

Review Centre/Group Mentor

West Midlands Evidence Synthesis Group (WM-ESG), across Universities of Warwick & Birmingham
Mentor: Dr Adel Elfeky, Assistant Professor

Review title

Airway pressure release ventilation (APRV) in adults and children on the intensive care unit: a systematic review and meta-analysis

Review type and methods

The review aims to assess the clinical and cost-effectiveness of airway pressure release ventilation compared with standard care in adults and children receiving invasive mechanical ventilation on an intensive care unit. The fellow will be supported to develop evidence synthesis methodology skills. The fellow will be involved in abstract and full text screening, data extraction and quality appraisal of included studies. The fellow will learn how to pool the results from the included studies in a meta-analysis (where feasible) and create forest plots in Stata. We will also help them understand how we use trial sequential analysis to assess the conclusiveness of meta-analysis results and GRADE to assess the certainty in the body of evidence. The fellow will contribute to writing up the associated manuscript and plain language summaries.

Please confirm that no existing review exists that addresses the review question

Most recent systematic review on this topic is of critically low quality.

Review information

This review is funded by UK NIHR Health Technology Assessment Programme (NIHR HTA).

Review details

The review aims to assess the clinical and cost-effectiveness of airway pressure release ventilation compared with standard care in adults and children receiving invasive mechanical ventilation on an intensive care unit.

Airway pressure release ventilation (APRV) is a commonly available ventilator mode characterised by a prolonged period of continuous positive airway pressure with intermittent periods of ventilation release. However, there is marked variability in how this might be delivered in practice. One key consideration is whether APRV is delivered using the TCAV (Time Controlled Adaptive Ventilation) approach.

Our PICO for the review is as follows:

Participants/population:

Adults and children receiving invasive mechanical ventilation on an intensive care unit.

Inclusion:

- Adults (aged 18-years or more) or children (aged one-month to 17-years) receiving invasive mechanical ventilation on an intensive care unit

Exclusion:

- Individuals receiving invasive mechanical ventilation in other settings (e.g. operating theatres)
- Newborns aged less than one-month.

Intervention:

Airway pressure release ventilation which is categorised by prolonged period of continuous positive airway pressure with intermittent periods of ventilation release. In some contexts, this strategy may be described as BIPAP, BI-LEVEL, inverse ratio ventilation, or other synonyms.

Comparator(s)/control:

Any invasive ventilation strategy which does not involve the use of airway pressure release ventilation, typically a pressure support or volume control ventilation mode.

Outcome(s):

Clinical effectiveness/ efficacy outcomes:

Duration of invasive mechanical ventilation, based on the definition used in the trial.

Length of stay (intensive care unit/ hospital), mortality (intensive care unit./ hospital or 28-days or 30-days), ventilator-free days, health-related quality of life, ventilator-free days (to day 28/30), clinically important adverse events.

Health economic outcomes:

Costs and quality-adjusted life years (QALY) gained associated with innovative ventilation strategies and their comparators; Incremental cost-effectiveness ratios (ICERs).

Review current status

Protocol will soon be registered on PROSPERO. Searches will start in September

Any specific/desirable requirements for fellow (e.g. clinical expertise, methodological expertise)

Relevant clinical expertise would be desirable

Estimated start and completion dates*

1st September 2024 to March 2025