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Clinical trials for sedation protocols

Dr Leanne M Aitken
Professor of Critical Care



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Protocol-directed sedation versus non-protocol-directed sedation in mechanically ventilated intensive care adults and children (Review)

Aitken LM, Bucknall T, Kent B, Mitchell M, Burmeister E, Keogh SJ

2018, Issue 11. Art. No.: CD009771.

Protocol-directed sedation

- Ordered by a physician
- Implemented by nurses, pharmacists, others
- Contains information on:
 - Sedative agent to use
 - When to commence, increase, decrease or cease
- Based on patient assessment
- Might include DSI etc
- Similar to, but distinct from, weaning protocol

Likely mechanism for improvement:

- Reduced individual variation

Outcomes identified for review

- Primary outcomes:
 - Duration of MV
 - ICU & Hospital mortality
- Secondary outcomes:
 - ICU & Hospital LOS
 - Total dose of sedation
 - Adverse events within ICU
 - Incidence of delirium in ICU
 - Incidence of tracheostomy in ICU
 - Memory, psychological, cognitive function – post hospital
 - Quality of life – post hospital

Outcomes found in review

Outcome	Number of studies (participants)
Duration of MV	4 (3283)
ICU mortality	2 (513)
Hospital mortality	3 (3082)
ICU LOS	4 (3128)
Hospital LOS	3 (2927)
Self-extubation	2 (2761)
Reintubation	1 (321)
Tracheostomy	3 (3082)

A note about 'duration' of MV

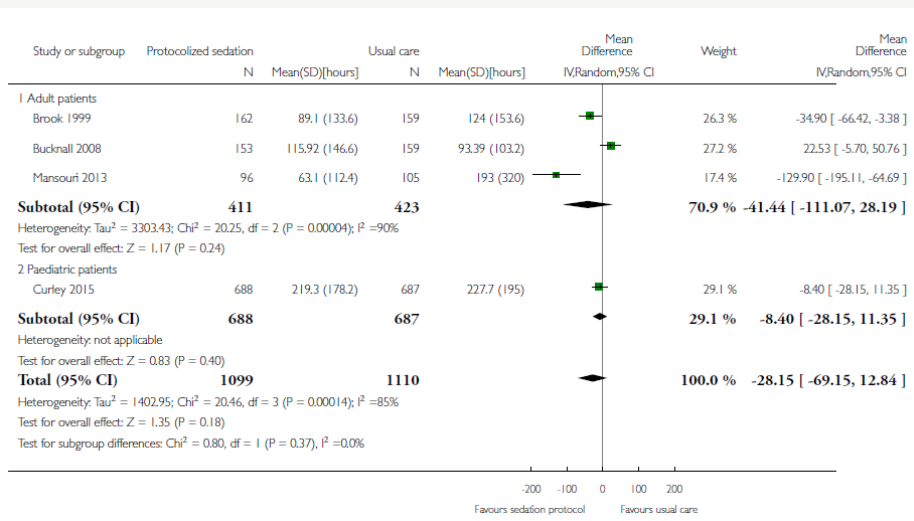
Highly variable methods of reporting this outcome including:

- Duration of MV
- Time to extubation
- Ventilator free days (to 28 days)

No studies that measured:

- Dose of sedation
- Incidence of delirium in ICU
- Memories
- Psychological function
- Cognitive function
- Quality of life
- Note – studies were completed in 1999, 2008, 2013, 2015

Results



- Inconsistent results across different contexts
- Factors that likely influence results of protocol interventions:
 - Usual practice
 - Degree of implementation of the intervention
 - Staffing types and levels

Process measures

- I.E. how well implemented was the intervention?
- Behavioural intervention
- Measures should include:
 - Context
 - Intervention fidelity
 - Dose:
 - Average daily dose of drugs
 - Sedation assessment
 - Calculated measure, e.g. sedation index
 - Coverage / reach
 - Timeliness

BASELINE: PRE-TRIAL

EXPLORATION: DURING TRIAL

CLARIFICATION: END-OF-TRIAL

Use a logic model to plan the process evaluation, identify and explore risk points in the intervention pathway, and inform the development of interview guides.

CONTEXT

Rationale: to explore the characteristics of the setting, and uncover the circumstances under which intervention delivery is optimised.

Consider: organisational structure; unit culture; leadership style; multi-disciplinary engagement; resources; usual practices relating to the target intervention problem.

Data sources: clinician interviews; ethnography; surveys/questionnaires; documents/policies/protocols.

ATTITUDES AND PERCEPTIONS

Rationale: to explore participant belief in, and response to, the intervention; and uncover its impact upon engagement with, and delivery of, interventions.

Consider: perceptions of intervention benefit/risk; worth/value assigned to the intervention; clinical acceptability; variation by profession/grade; intervention recipient.

Data sources: clinician interviews.

FIDELITY

Rationale: to evaluate the extent to which interventions are delivered as intended; and uncover *if, how, and why* intervention fidelity is (or is not) optimised.

Consider: intervention complexity; support strategies; unanticipated consequences; knowledge deficits.

Data sources: clinician interviews; ethnography; documentary analysis; protocol compliance/deviation; CRFs.

DOSE

Rationale: to evaluate the amount of the intended intervention that is actually delivered; and uncover *if, how, and why* intervention dose is (or is not) optimised.

Consider: intervention complexity; support strategies; unanticipated consequences; knowledge deficits.

Data sources: clinician interviews; ethnography; documentary analysis; protocol compliance/deviation; CRFs; staff training data.

REACH

Rationale: to evaluate the proportion of intended recipients who received the intervention; and uncover *if, how, and why* intervention reach is (or is not) optimised.

Consider: intervention complexity; support strategies; unanticipated consequences; knowledge deficits.

Data sources: clinician interviews; trial screening and recruitment logs.

RECRUITMENT

Rationale: to evaluate recruitment rates and time-trends within units; explore procedures used to ensure/promote recruitment; and explore *if, how, and why* recruitment varies.

Consider: work patterns/availability of research teams; trial design including inclusion/exclusion criteria.

Data sources: routine trial data pertaining to screening and recruitment, clinician interviews.

IMPLEMENTATION

Rationale: to develop a score/grade indicating the overall quality of intervention delivery.

Data sources: a composite of fidelity, dose, and reach.

Emerson L.
Unpublished PhD,
2019

Thoughts moving forward

- This meeting is about 'patient-centred outcomes'
 - ICU focused
 - Hospital focused
 - Medium – long term
- Without 'process measures' it is difficult to explain variation in outcomes

Leanne.Aitken.1@city.ac.uk