Cardiorespiratory physical therapy for patients with acute medical conditions: qualitative systematic review
Crowe J, Brooks D, Kelsey C J, Lacy J B, Parsons J, Solway S

CRD summary
The authors concluded that the evidence was sparse, weak and difficult to interpret. The authors' conclusions reflect the paucity of the evidence presented but the implications for practice may be overstated due to the quality and quantity of the underlying evidence.

Authors' objectives
To evaluate the evidence for cardiorespiratory physical therapy techniques in the management of patients with acute medical conditions.

Searching
MEDLINE and CINAHL were searched to February 2002 and EMBASE was searched to August 2002; search terms were reported. The Cochrane Library was searched (dates not reported). Searches were limited to articles in English. Reference lists of identified studies were checked.

Study selection
Randomised controlled trials (RCTs) of cardiorespiratory physical therapy interventions for adult in-patients with acute medical conditions were eligible for inclusion. RCTs with a crossover design were included. Studies with significant methodological and/or statistical problems and studies of postsurgical patients were excluded.

Cardiorespiratory physical therapy interventions included postural drainage, coughing, huffing, percussion, vibration, positioning, turning and hyperinflation. Studies evaluated physical therapy in a range of acute conditions (atelectasis, pneumonia, pneumothorax, pleural effusion, deep vein thrombosis, acute myocardial infarction and mechanically ventilated patients). Measured outcomes included pulmonary and cardiorespiratory measures, mortality and length of hospital stay.

Titles and abstracts were assessed by at least two reviewers; results from the Cochrane Library search were assessed by one reviewer.

Assessment of study quality
Two reviewers independently assessed study quality using the Jadad scale of randomisation, blinding and withdrawals. Generally, the maximum Jadad score is 5 (indicating higher quality). Disagreements were resolved by consensus.

Data extraction
Two reviewers were involved in data extraction, which focused on directions of effect, statistical significance of differences and p-values.

Methods of synthesis
A narrative synthesis was presented. Studies were grouped by patient population.

Results of the review
Twenty four RCTs were included (1,603 patients); seven RCTs were a crossover design. Thirteen studies scored 3 on the Jadad scale (the best possible score owing to double-blinding often not being possible). Most of the included studies were small and all were underpowered.

The evidence showed either mixed results or no differences between physiotherapy and control group outcomes in patients with atelectasis, pneumonia, pneumothorax, pleural effusion, deep vein thrombosis and acute myocardial infarction. One large study supported the use of prone positioning to improve oxygenation in patients with acute respiratory distress syndrome. One small crossover study found oxygenation was improved in mechanically ventilated
patients with respiratory failure by side-lying with the affected lung uppermost. There were mixed results for use of oscillating beds in mechanically ventilated patients.

**Authors' conclusions**
The evidence about the role of cardiorespiratory physical therapy in acute medical conditions was sparse, weak and difficult to interpret.

**CRD commentary**
The review question was clear. Inclusion criteria were not stated explicitly but could be inferred from the review question and exclusion criteria. The search was restricted to publications in English and no attempts were made to locate unpublished studies; language bias may have been present and some studies may have been missed. Some efforts were made to minimise reviewer bias and error. Narrative synthesis was appropriate given significant clinical and methodological differences between the studies. Studies were small, underpowered and lacked reliable and appropriate outcome measures.

This is a relatively old review and more evidence may have been published since the search date (2002). The authors' conclusions reflect the paucity of the evidence presented but the implications for practice may be overstated as each recommendation is based on a single underpowered trial.

**Implications of the review for practice and research**
**Practice:** The authors stated that patients with unilateral pulmonary diagnoses should be positioned side-lying with the affected lung placed uppermost to improve oxygenation. The authors also recommended placing patients with acute respiratory distress syndrome in prone position to improve oxygenation and measuring oxygen saturation when using all positioning strategies.

**Research:** The authors stated that large adequately powered trials should evaluate specific physical therapy techniques in cardiorespiratory conditions and validate outcome measures in these patients.

**Funding**
Ontario Respiratory Care Society, Ontario Lung Association, Canada.

**Bibliographic details**

**Indexing Status**
Subject indexing assigned by CRD

**MeSH**
Myocardial Infarction; Physical Therapy Modalities; Pleural Effusion; Pneumonia; Pneumothorax; Pulmonary Atelectasis; Respiratory Insufficiency /therapy; Venous Thrombosis

**AccessionNumber**
12004005076

**Date bibliographic record published**
08/06/2004

**Date abstract record published**
26/03/2014

**Record Status**
This is a systematic review that meets the criteria for inclusion on DARE.