Ambulation after deep vein thrombosis: a systematic review

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CRD summary
This review concluded that there was no significant difference between ambulation and bed rest for the risk of developing a pulmonary embolism or the development and progression of a new thrombus in patients with acute deep vein thrombosis. These conclusions were consistent with the evidence shown and appear to be broadly reliable.

Authors' objectives
To examine the effects of early ambulation on development of pulmonary embolism and progression or development of a new thrombus in patients with acute deep vein thrombosis.

Searching
PubMed, EMBASE, CINAHL, PEDro, and the Cochrane Library were searched from inception to June 2008, for studies published in English. Search terms were reported. Reference lists of retrieved papers were reviewed.

Study selection
Randomised controlled trials (RCTs) of acute care patients (aged over 18 years) that used the standard assessment measures for the diagnosis of a pulmonary embolism or development or progression of a thrombus were eligible for inclusion. The standard assessment measures for pulmonary embolism included ventilation, perfusion scans, pulmonary angiography, and spiral computerized tomography. The standard assessment measures for deep vein thrombosis included duplex sonography, venography, compression sonography, and magnetic resonance imaging.

The mean age for included patients ranged from 52 to 66 years. All the patients in included trials had proximal deep vein thrombosis and were treated as in-patients; they all received anticoagulation therapy upon diagnosis of the deep vein thrombosis. Ambulation was given with compression in all trials. The comparators were bed rest with compression, or bed rest alone. At trial entry, from 47 to 70% of patients were also diagnosed with a pulmonary embolism, most of which were asymptomatic.

Three reviewers independently selected studies and there were no disagreements.

Assessment of study quality
Quality of the included trials was assessed using the Jadad (scores from 0 to 5) and PEDro (scores from 0 to 10) scales. Randomization, blinding, and drop-outs or withdrawals were the quality domains assessed by the Jadad scale; the PEDro scale assessed randomization, blinding, homogeneity of trial groups, and outcome measures. The details of how the individual components were assessed were not reported.

Three reviewers independently assessed quality of the included studies. The review team met to reach consensus.

Data extraction
Relative risk (RR) and 95% confidence intervals (CI) were calculated for development of a pulmonary embolism, progression of an existing thrombus, and development of a new thrombus.

Three reviewers independently extracted the data and resolved discrepancies by discussion.

Methods of synthesis
Relative risks with 95% confidence intervals were combined in meta-analyses using a random-effects model.

Results of the review
Four RCTs met the inclusion criteria (n=406 patients). Quality scores for the Jadad scale for the four trials ranged from
1 to 3 out of 5 points; all trials scored 7 out of 10 on the PEDro scale. Follow-up evaluations were completed from day four to 12.

There was no statistically significant difference in the pooled relative risks of the development of a pulmonary embolism for patients treated with ambulation plus compression compared with bed rest plus compression (RR 0.63, 95% CI 0.34 to 1.19; two RCTs, n=224 participants) or bed rest alone (RR 1.36, 95% CI 0.57 to 3.29; two RCTs, n=182 participants).

There was no significant difference in progression of an existing deep vein thrombus or development of a new thrombus for patients treated with ambulation plus compression compared with bed rest plus compression (RR 0.39, 95% CI 0.13 to 1.14; one RCT, n=102 participants) or bed rest alone (RR 0.56, 95% CI 0.20 to 1.57; one RCT, n=53 participants).

Two trials were stopped early due to patients or centres not wanting to use an immobilising treatment.

**Authors' conclusions**
There was no significant difference between ambulation and bed rest for risk of developing a pulmonary embolism, or development and progression of a new deep vein thrombosis.

**CRD commentary**
This review addressed a well-defined question in terms of participants, interventions, outcomes, and study design. The search included appropriate databases, but no attempts were made to retrieve unpublished studies or studies not published in English so some relevant data might have been missed. To minimise bias and errors during the review process, three reviewers independently selected trials, extracted data, and assessed the quality of the included trials.

Quality of the included trials was assessed using the Jadad and PEDro criteria, but how each quality component was assessed was not reported. Full results of quality assessment were not reported (only the scores), which made it difficult to interpret the reliability of the review findings. The characteristics of the individual trials were reported.

Although there were some methodological limitations in the included trials and the review process, the authors' conclusions were consistent with the evidence shown and appear to be broadly reliable.

**Implications of the review for practice and research**

**Practice:** The authors stated that clinicians should be confident in prescribing ambulation for their patients with acute deep vein thrombosis.

**Research:** The authors did not state any research implications.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.