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[Intervention Review]

# Parenteral anticoagulation in ambulatory patients with cancer

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## ABSTRACT

### Background

Anticoagulation may improve survival in patients with cancer through an antitumor effect in addition to the perceived antithrombotic effect.

### Objectives

To evaluate the efficacy and safety of parenteral anticoagulants in ambulatory patients with cancer who, typically, are undergoing chemotherapy, hormonal therapy or radiotherapy, but otherwise have no standard therapeutic or prophylactic indication for anticoagulation.

### Search methods

A comprehensive search included (1) an electronic search (February 2013) of the following databases: Cochrane Central Register of Controlled Trials (CENTRAL) (2013, Issue 1), MEDLINE (1966 to February 2013; accessed via OVID) and EMBASE(1980 to February 2013; accessed via OVID); (2) handsearching of conference proceedings; (3) checking of references of included studies; (4) use of the 'related citation' feature in PubMed and (5) a search for ongoing studies.

### Selection criteria

Randomized controlled trials (RCTs) assessing the benefits and harms of parenteral anticoagulation in ambulatory patients with cancer. Typically, these patients are undergoing chemotherapy, hormonal therapy or radiotherapy, but otherwise have no standard therapeutic or prophylactic indication for anticoagulation.

### Data collection and analysis

Using a standardized form we extracted data in duplicate on methodological quality, participants, interventions and outcomes of interest including all-cause mortality, symptomatic venous thromboembolism (VTE), symptomatic deep vein thrombosis (DVT), symptomatic pulmonary embolism (PE), arterial thrombosis (e.g. stroke, myocardial infarction), major bleeding, minor bleeding and quality of life.

## Main results

Of 9559 identified citations, 15 RCTs fulfilled the eligibility criteria. These trials enrolled 7622 participants for whom follow-up data were available. In all included RCTs the intervention consisted of heparin (either unfractionated heparin or low molecular weight heparin). Overall, heparin may have a small effect on mortality at 12 months and 24 months (risk ratio (RR) 0.97; 95% confidence interval (CI) 0.92 to 1.01 and RR 0.95; 95% CI 0.90 to 1.00, respectively). Heparin therapy was associated with a statistically and clinically important reduction in venous thromboembolism (RR 0.56; 95% CI 0.43 to 0.74) and a clinically important increase in the risk of minor bleeding (RR 1.32; 95% CI 1.02 to 1.71). Results failed to show or to exclude a beneficial or detrimental effect of heparin on major bleeding (RR 1.13; 95% CI 0.63 to 2.01) or quality of life. Our confidence in the effect estimates (i.e. quality of evidence) was high for symptomatic venous thromboembolism, moderate for mortality, major bleeding and minor bleeding, and low for quality of life.

## Authors' conclusions

Heparin may have a small effect on mortality at 12 months and 24 months. It is associated with a reduction in venous thromboembolism and a likely increase in minor bleeding. Future research should further investigate the survival benefit of different types of anticoagulants in patients with different types and stages of cancer. The decision for a patient with cancer to start heparin therapy for survival benefit should balance the benefits and downsides, and should integrate the patient's values and preferences.

## PLAIN LANGUAGE SUMMARY

### Injectable blood thinners (anticoagulants) in patients with cancer

#### Background

Research evidence suggests that blood thinners may improve the survival of patients with cancer. This benefit could be related to a direct antitumor effect in addition to preventing blood clots.

#### Study characteristics

We searched the scientific literature for studies of anticoagulants in people with cancer. The evidence is current to February 2013. Fifteen eligible trials

#### Key results

We selected 15 trials including 7662 participants with cancer. Most trials included participants with various types of cancer especially small cell lung cancer, non-small cell lung cancer, and pancreatic cancer. All studies were conducted in the outpatient setting. suggest that injectable blood thinners reduce the risk of blood clots by about half and possibly increase the risk of minor bleeding by 30%. The effects on survival and quality of life are uncertain, but if anything of small size.

#### Quality of evidence

We judged the quality of evidence to be high for symptomatic venous thromboembolism, moderate for mortality, major bleeding and minor bleeding, and low for quality of life.