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(Review)

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Self-monitoring and self-management of oral anticoagulation

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ABSTRACT

Background

The introduction of portable monitors (point-of-care devices) for the management of patients on oral anticoagulation allows self-testing by the patient at home. Patients who self-test can either adjust their medication according to a pre-determined dose-INR schedule (self-management) or they can call a clinic to be told the appropriate dose adjustment (self-monitoring). Several trials of self-monitoring of oral anticoagulant therapy suggest this may be equal to or better than standard monitoring.

Objectives

To evaluate the effects of self-monitoring or self-management of oral anticoagulant therapy compared to standard monitoring.

Search methods

We searched the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library 2007, Issue 4), MEDLINE, EMBASE and CINAHL (to November 2007). We checked bibliographies and contacted manufacturers and authors of relevant studies. No language restrictions were applied.

Selection criteria

Outcomes analysed were thromboembolic events, mortality, major haemorrhage, minor haemorrhage, tests in therapeutic range, frequency of testing, and feasibility of self-monitoring and self-management.

Data collection and analysis

The review authors independently extracted data. We used a fixed-effect model with the Mantel-Haenszel method to calculate the pooled risk ratio (RR) and Peto’s method to verify the results for uncommon outcomes. We examined heterogeneity amongst studies with the Chi2 and I2 statistics.
Main results

We identified 18 randomized trials (4723 participants). Pooled estimates showed significant reductions in both thromboembolic events (RR 0.50, 95% CI 0.36 to 0.69) and all-cause mortality (RR 0.64, 95% CI 0.46 to 0.89). This reduction in mortality remained significant after the removal of low-quality studies (RR 0.65, 95% CI 0.46 to 0.90). Trials of self-management alone showed significant reductions in thromboembolic events (RR 0.47, 95% CI 0.31 to 0.70) and all-cause mortality (RR 0.55, 95% CI 0.36 to 0.84); self-monitoring did not (thrombotic events RR 0.57, 95% CI 0.32 to 1.00; mortality RR 0.84, 95% CI 0.50 to 1.41). Self-monitoring significantly reduced major haemorrhages (RR 0.56, 95% CI 0.35 to 0.91) whilst self-management did not (RR 1.12, 95% CI 0.78 to 1.61). Twelve trials reported improvements in the percentage of mean INR measurements in the therapeutic range. No heterogeneity was identified in any of these comparisons.

Authors' conclusions

Compared to standard monitoring, patients who self-monitor or self-manage can improve the quality of their oral anticoagulation therapy. The number of thromboembolic events and mortality were decreased without increases in harms. However, self-monitoring or self-management were not feasible for up to half of the patients requiring anticoagulant therapy. Reasons included patient refusal, exclusion by their general practitioner, and inability to complete training.

Plain Language Summary

Self-monitoring and self-management of oral anticoagulation therapy

Near patient or point-of-care testing devices have made it possible for people on long-term oral anticoagulation to monitor their blood clotting time measured as the international normalized ration (INR) in the home setting. Patients who self-test can either adjust their medication dose according to a pre-determined dose-INR schedule (self-management) or they can call a clinic to be told the appropriate dose adjustment (self-monitoring). Several published studies suggest these methods of monitoring anticoagulation therapy may be equal to or better than standard monitoring by a physician.

In total, we found 18 randomized trials that compared self-monitoring and self-management with standard monitoring. The combined results of these trials showed a halving of thromboembolic events and all-cause mortality with self-monitoring and self-management and no reduction in the number of major bleeds. Self-management had similar reductions in thromboembolic events and mortality to the overall benefit, with no effect on major bleeds. Self-monitoring halved the number of major haemorrhages that occurred but did not significantly reduce the rates of thrombotic events or all-cause mortality.

In conclusion, self-monitoring or self-management can improve the quality of oral anticoagulant therapy, leading to fewer thromboembolic events and lower mortality, without a reduction in the number of major bleeds. Self-monitoring and self-management are not feasible for all patients, which requires the identification and education of suitable patients.