Targeting cardiovascular medication adherence interventions
Catrona SL, Choudhry NK, Fischer MA, Servi AD, Stedman M, Liberman JN, Brennan TA, Shrank WH

CRD summary
The review concluded that adherence interventions for patients who had not adhered, were varied and might have had advantages over general interventions for all patients receiving cardiovascular or diabetes medication. The uncertain quality of the evidence and differences across trials, mean that the authors’ conclusions may be unreliable and should be viewed with caution.

Authors' objectives
To determine whether adherence interventions should be for all patients on cardiovascular or diabetes medication, or just for those who have not adhered to it.

Searching
EMBASE and MEDLINE were searched for articles, in English, from 1966 to 2009. Search terms were reported.

Study selection
Randomised controlled trials (RCTs) of interventions to improve adherence to medication, in adult patients (aged 18 years or older), who were prescribed medication to prevent or treat cardiovascular disease or diabetes, were eligible for inclusion. Trials had to report long-term out-patient medication adherence. They were excluded if they studied regimen simplification, or if they had a follow-up of less than 24 weeks.

The included trials studied broad, focused, and dynamic adherence interventions. The type of medication varied across trials. The mean age of patients ranged from 46 to 78 years. Trials were published between 1975 and 2010, and were conducted in a variety of countries, including the UK, Canada, Poland, Italy, and the USA. The trial duration ranged from 180 days to three years.

The authors did not state how many reviewers selected the studies.

Assessment of study quality
Quality assessment was undertaken using the Jadad scale, which appraised randomisation, blinding, and withdrawals and dropouts, to give a score out of 5. The authors did not state how many reviewers assessed trial quality.

Data extraction
Data were extracted on long-term out-patient medication adherence, and used to calculate effect sizes and 95% confidence intervals. Two reviewers extracted the data and disagreements were resolved by consensus.

Methods of synthesis
To compare different outcome measures, all effect sizes were converted into Cohen's d statistics. Fixed-effect meta-analysis was used to calculate the pooled effect sizes and 95% confidence intervals, but the results were not presented due to heterogeneity. A narrative synthesis was presented, grouping the interventions into focused, broad, or dynamic. Statistical heterogeneity was assessed, but the method was not clearly stated. Effect sizes were classified as: large (≥0.8), medium (0.5 to 0.79), small (0.2 to 0.49) or very small (<0.2).

Results of the review
A total of 59 trials were included in the review (42,721 patients): four were of focused interventions, 25 were of broad interventions, and 30 were of dynamic interventions. The sample sizes ranged from 30 to 13,100 patients. The quality of all trials was low; no trials were blinded.

Focused interventions: One of the four trials (25%) found a medium effect, and the other three (75%) found small effects, in improving adherence to cardiovascular or diabetes medication.

Broad interventions: Five of the 25 trials (18%) found medium to large effects, 17 (68%) found small effects, and three
(14%) found no effect or negative effects. Thirteen trials assessed interventions requiring a health professional, and one of these found a medium effect, seven found a small or very small effects, and two found no effect or negative effects. Six trials assessed electronic resources; all but one found a small or very small effect. Six trials used family support and education interventions; three found a small or very small effect and one found a negative effect.

**Dynamic interventions:** Ten of the 30 trials (32%) found large or medium effects, 15 trials (50%) found small or very small effects, and five trials (18%) found no effect or negative effects.

**Authors' conclusions**
Adherence interventions for patients who had not adhered, were varied and might have had advantages over general interventions for all patients receiving cardiovascular or diabetes medication.

**CRD commentary**
The inclusion criteria were broadly defined and two relevant databases were searched. There was the potential for language bias as only articles in English were included. Publication bias was not assessed and cannot be ruled out, as the authors acknowledged. Attempts were made to reduce reviewer error and bias in data extraction, but it was unclear if the same attempts were made in quality assessment and study selection. Quality was assessed using the Jadad criteria, even though the authors deemed that the tool was not suitable for this type of intervention, and the trials were of low quality.

There were differences across the trials in the type of intervention, medication, patient characteristics, and outcomes. The data were synthesised in a narrative as the trials were deemed too heterogeneous to pool, and the results of the meta-analysis were not presented. The results for broad and dynamic interventions were mixed, and there were only four small trials for focused interventions, which limits the ability to interpret the evidence meaningfully.

The uncertain quality of the evidence and differences across trials, mean that the authors' conclusions may be unreliable and should be viewed with caution.

**Implications of the review for practice and research**
**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that research into the best ways to improve adherence, in non-adherent patients, was needed, with standardised methods for measuring adherence. Focused and dynamic interventions particularly needed further study, as they showed the most promise.

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