Effectiveness of interventions by community pharmacists to improve patient adherence to chronic medication: a systematic review
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CRD summary
This review assessed interventions by community pharmacists to improve patients' adherence with chronic medication. The authors concluded that it is not currently possible to identify one particular successful intervention and that more good-quality research is required. There were limitations to the review but, overall, the authors' conclusions correctly reflect the diversity of the studies and are likely to be reliable.

Authors' objectives
To assess the effectiveness of interventions by community pharmacists to improve patients' adherence with chronic medication.

Searching
MEDLINE was searched from 1966 to November 2003 using the reported search terms. Searches of reviews, meta-analyses and the reference lists of selected studies were also conducted. Studies were only included if they were published in English or German.

Study selection
Study designs of evaluations included in the review
Controlled and uncontrolled, prospective and retrospective and randomised and non-randomised studies were eligible for inclusion. Most of the studies followed up patients for at least 1 year (range: 5 days to 2 years).

Specific interventions included in the review
Studies of interventions to improve patient adherence with medication in which the community pharmacist was the sole health care professional in a community pharmacy setting were eligible for inclusion. The interventions could be aimed at groups or individuals and could include any type of action. Most of the included interventions were based on education, monitoring and (advanced) counselling. Comparator interventions, where these existed, were usual care.

Participants included in the review
Studies of patients who had been prescribed medication for chronic disease (defined as lasting or expected to last longer than 3 months) were eligible for inclusion. The included studies evaluated patients with hypertension, diabetes, asthma, chronic obstructive airways disease, hyperlipidaemia, congestive heart failure and coronary artery disease. The studies included patients who were just starting medication and chronic users. Adherence rates at baseline were generally high.

Outcomes assessed in the review
Studies that assessed patient adherence as a primary or secondary outcome were eligible for inclusion. Adherence could be measured in a variety of stated ways, but drop-outs and withdrawals from the study were not considered as measures of adherence. Most of the included studies assessed adherence using self-report or pill counts; others used pharmacy records or the medication event monitoring system.

How were decisions on the relevance of primary studies made?
Two reviewers independently selected studies and any disagreements were resolved by discussion.

Assessment of study quality
Studies were assessed for method of patient recruitment, randomisation method, blinding of the outcome assessor, losses to follow-up, reasons for losses and the reporting of power calculations. One reviewer performed the validity
Data extraction
One reviewer extracted the data from each included study. Data on adherence rates and whether the treatment difference was statistically significant (P<0.05) were extracted.

Methods of synthesis
How were the studies combined?
The results of the studies were tabulated and combined in a narrative.

How were differences between studies investigated?
Differences between the studies were discussed with respect to quality criteria, methods used to measure adherence and the characteristics of the participants; other differences were evident from associated tables.

Results of the review
Eighteen studies (n=2,607) were included: 12 randomised controlled trials (RCTs; n=1,698) and 6 non-crossover single-group trials (NCSGTs; n=909).

Study quality was generally low. Methodological problems included use of patients as their own control, high losses to follow-up, lack of blinding of the outcome assessor, inclusion criteria unclear and the lack of power calculations.

Eight studies (5 RCTs and 3 NCSGTs) showed significant improvements in adherence following the intervention. In three of these significant improvements were only shown at specific time points following the intervention.

Eight studies (7 RCTs and 1 NCSGT) showed no significant improvements in adherence with the intervention.

The remaining 2 studies (NCSGTs) had no control group and did not report baseline adherence rates, thus it was not possible to assess the impact of the intervention.

Authors' conclusions
It is not currently possible to identify an overall successful intervention by pharmacists that improves patient adherence with chronic medication. More good-quality research is required.

CRD commentary
The review question was clear in terms of the study design, intervention, participants and outcomes. The search strategy was limited to studies published in either of two languages and indexed in one electronic database or reference lists, thus the possibility of publication bias is likely. The reviewers acknowledged the potential for publication and language bias. Methods were used to minimise errors and bias in the study selection process, but it is was unclear whether similar steps were taken in the assessment of validity and extraction of data. Validity was assessed using specified criteria and the results of the assessment were reported.

Adequate information on the primary studies was provided. The narrative synthesis was appropriate given the diversity of the studies. Differences between the studies were thoroughly discussed and pertinent methodological points were noted. Overall, the authors' conclusions correctly reflect the diversity of the studies and are likely to be reliable.

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

Research: The authors stated that further well-designed and well-conducted trials of interventions by community pharmacists aimed at improving adherence to chronic medication are required. They further stated that an economic
analysis should be conducted where interventions are found to be successful.

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