Interventions used to improve control of blood pressure in patients with hypertension (Review)

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[Intervention Review]

Interventions used to improve control of blood pressure in patients with hypertension

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ABSTRACT

Background

Patients with high blood pressure (hypertension) in the community frequently fail to meet treatment goals - a condition labelled as “uncontrolled” hypertension. The optimal way to organize and deliver care to hypertensive patients has not been clearly identified.

Objectives

To determine the effectiveness of interventions to improve control of blood pressure in patients with hypertension. To evaluate the effectiveness of reminders on improving the follow-up of patients with hypertension.

Search strategy

All-language search of all articles (any year) in the Cochrane Controlled Trials Register (CCTR) and Medline; and Embase from January 1980.

Selection criteria

Randomized controlled trials (RCTs) of patients with hypertension that evaluated the following interventions:

(1) self-monitoring

(2) educational interventions directed to the patient

(3) educational interventions directed to the health professional

(4) health professional (nurse or pharmacist) led care

(5) organisational interventions that aimed to improve the delivery of care

(6) appointment reminder systems

Outcomes assessed were:

(1) mean systolic and diastolic blood pressure

(2) control of blood pressure

(3) proportion of patients followed up at clinic

Data collection and analysis

Two authors extracted data independently and in duplicate and assessed each study according to the criteria outlined by the Cochrane Handbook.

Main results

72 RCTs met our inclusion criteria. The methodological quality of included studies varied. An organized system of regular review allied to vigorous antihypertensive drug therapy was shown to reduce systolic blood pressure (weighted mean difference (WMD) -8.0 mmHg, 95% CI: -8.8 to -7.2 mmHg) and diastolic blood pressure (WMD -4.3 mmHg, 95% CI: -4.7 to -3.9 mmHg) for three strata of entry blood pressure, and all-cause mortality at five years follow-up (6.4% versus 7.8%, difference 1.4%) in a single large RCT- the Hypertension Detection and Follow-Up study. Other interventions had variable effects. Self-monitoring was associated with moderate net reduction in systolic blood pressure (WMD -2.5 mmHg, 95% CI: -3.7 to -1.3 mmHg) and diastolic blood pressure (WMD -1.8 mmHg, 95% CI: -2.4 to -1.2 mmHg). RCTs of educational interventions directed at patients or health professionals were heterogeneous but appeared unlikely to be associated with large net reductions in blood pressure by themselves. Nurse or pharmacist led care may be a promising way forward, with the majority of RCTs being associated with improved blood pressure control and mean SBP and DBP but these interventions require further evaluation. Appointment reminder systems also require further evaluation due to heterogeneity and small trial numbers, but the majority of trials increased the proportion of individuals who attended for follow-up (odds ratio 0.41, 95% CI 0.32 to 0.51) and in two small trials also led to improved blood pressure control, odds ratio favouring intervention 0.54 (95% CI 0.41 to 0.73).

Authors' conclusions

Family practices and community-based clinics need to have an organized system of regular follow-up and review of their hypertensive patients. Antihypertensive drug therapy should be implemented by means of a vigorous stepped care approach when patients do not reach target blood pressure levels. Self-monitoring and appointment reminders may be useful adjuncts to the above strategies to improve blood pressure control but require further evaluation.

PLAIN LANGUAGE SUMMARY

What interventions improve the control of high blood pressure

There is little evidence as to how care for hypertensive patients should be organized and delivered in the community to help improve blood pressure control. This review aimed to determine the effectiveness of interventions whose objective was to improve follow-up and control of blood pressure in patients taking blood pressure lowering drugs. We included studies that had as population of interest adult patients with essential hypertension in an ambulatory setting. The interventions included all those that aimed to improve blood pressure control. The outcomes assessed were mean systolic and diastolic blood pressure, control of blood pressure and the proportion of patients followed up at clinic.

Seventy two randomised controlled trials met our inclusion criteria. The range of interventions used included (1) self-monitoring, (2) educational interventions directed to the patient, (3) educational interventions directed to the health professional, (4) health professional (nurse or pharmacist) led care, (5) organizational interventions that aimed to improve the delivery of care, (6) appointment reminder systems. The trials showed a wide variety of methodological quality, part of which may be attributed to poor reporting. An organized system of regular review allied to vigorous antihypertensive drug therapy was shown to reduce blood pressure and all-cause mortality in a single large RCT- the Hypertension Detection and Follow-Up study. Other interventions had variable effects. Weighted data analysis showed that self-monitoring was associated with moderate net reductions in systolic blood pressure (weighted mean difference -2.5 mmHg, 95% CI: -3.7 to -1.3 mmHg) and diastolic blood pressure (weighted mean difference -1.8 mmHg, 95% CI: -2.4 to -1.2 mmHg). Trials of educational interventions directed at patients or health professionals were heterogeneous but appeared unlikely to be associated with large net reductions in blood pressure by themselves. Nurse or pharmacist led care may be a promising way of improving control in patients with hypertension, with the majority of RCTs being associated with improved blood pressure control, improved systolic blood pressure and more modestly improved diastolic blood pressure, but these interventions require further evaluation. Appointment reminder systems increased the proportion of individuals who attended for follow-up (absolute difference 16%, but this pooled result should be treated with caution because of the heterogeneous results from individual RCTs) and in two small trials also led to improved blood pressure control, odds ratio favouring intervention 0.54 (95% CI 0.41 to 0.73).

We conclude that an organized system of registration, recall and regular review allied to a vigorous stepped care approach to antihypertensive drug treatment appears the most likely way to improve the control of high blood pressure. Health professional (nurse or pharmacist) led care and appointment reminder systems requires further evaluation. Education alone, either to health professionals or patients, does not appear to be associated with large net reductions in blood pressure.