

PLAIN LANGUAGE SUMMARIES OF IMPORTANT RESEARCH ARTICLES

TOPIC: PREVENTION OF HYPERTENSION

SUB-TOPIC: DIET AND LIFESTYLE MODIFICATION

Usually medical journals are loaded with scholarly scientific research articles and these journals offer very little to an ordinary reader. We are starting a new section in KMJ where a very high quality research by Cochrane network will be presented as *plain language summary* on topics of public interest. In this issue, we will look at some important studies related to prevention of hypertension (high blood pressure), a silent killer, affecting a major bulk of population worldwide. (Editor)

- **Effect of longer-term modest salt reduction on blood pressure**

He FJ, MacGregor GA

Current public health recommendations in most developed countries are to reduce salt intake by about half, i.e. from approximately 10 grams per day to 5 grams per day. Our pooled analysis of randomised trials of 4 weeks or more in duration showed that reduction in salt intake lowers blood pressure both in individuals with elevated blood pressure and in those with normal blood pressure. These results support other evidence for a modest and long term reduction in population salt intake. If this occurred it would result in a lower population blood pressure, and a reduction in strokes, heart attacks and heart failure. Furthermore, our study is consistent with the fact that the lower the salt intake, the lower the blood pressure. The current recommendations to reduce salt intake to 5 grams per day will lower blood pressure, but a further reduction to 3 grams per day will lower blood pressure more.

He FJ, MacGregor GA. Effect of longer-term modest salt reduction on blood pressure. Cochrane Database of Systematic Reviews 2004, Issue 3. Art. No.: CD004937. DOI: 10.1002/14651858.CD004937

- **Calcium supplementation for the management of primary hypertension in adults**

Dickinson HO, Nicolson D, Cook JV, Campbell F, Beyer FR, Ford GA, Mason J

This review did not find robust evidence that oral calcium supplementation reduces high blood pressure in adults. It reviewed 13 trials enrolling 485 people, which compared calcium supplementation with placebo or no treatment, and measured blood pressure 8 to 15 weeks later. On average, people receiving extra calcium achieved slightly lower systolic blood pressure at the end of trials. However, most trials were of poor quality, so their results may not be reliable. Trials were too small and short to measure whether extra calcium reduces the risk of death, heart attack or stroke. Calcium usually

had no more adverse effects than placebo. Larger, longer duration, better quality trials are needed to clarify whether calcium supplementation can lower high blood pressure.

Dickinson HO, Nicolson D, Cook JV, Campbell F, Beyer FR, Ford GA, Mason J. Calcium supplementation for the management of primary hypertension in adults. Cochrane Database of Systematic Reviews 2006, Issue 2. Art. No.: CD004639. DOI: 10.1002/14651858.CD004639.pub2

- **Relaxation therapies for the management of primary hypertension in adults**

Dickinson HO, Beyer FR, Ford GA, Nicolson D, Campbell F, Cook JV, Mason J

The World Health Organisation estimates that high blood pressure leads to over 7 million deaths each year, about 13% of the total deaths worldwide. If people lower their blood pressure, they are less likely to die or to have heart attacks and strokes. If someone's blood pressure is only slightly too high, they may prefer trying to lower it by changing their lifestyle rather than starting on drugs. Although we know that relaxing can counteract the short-term increases in blood pressure that are caused by stress, we don't know if a sustained programme of relaxation can produce long-term reductions in blood pressure or decrease the risk of death, heart attack and stroke.

Our review pooled findings from 1,198 people with blood pressure over 140/85 mmHg who were enrolled in 25 randomised controlled trials. These trials compared the effect of relaxation either with no treatment or with a dummy treatment which wasn't expected to reduce blood pressure. Overall, relaxation reduced blood pressure by a small amount: the average reduction was 5/3 mmHg, but might be anywhere between 8/5 mmHg and 3/2 mmHg. Different trials gave different "sometimes inconsistent" results. Many of the trials were not well designed or conducted. In the good quality trials, relaxation resulted in smaller average reductions in blood pressure and the results could even be consistent with an average increase in blood pressure. Even when all the trials were put together, the combined group of all the people in all the trials wasn't large enough and the trials didn't run for long enough to tell us whether relaxation could reduce the risk of death, heart attack or stroke. Few people reported side-effects of relaxation and, on average, people were just as likely to report side-effects of the comparison treatment.

Different types of relaxation were taught in different trials. It was difficult to disentangle their effects, es-

pecially as many trials used a combination of methods. Overall, we found no evidence that autogenic training was effective. Progressive muscle relaxation, cognitive/behavioural therapies and biofeedback seemed to be more likely to reduce blood pressure. However, some of the reduction in blood pressure was almost certainly due to aspects of treatment that were not related to relaxation, such as frequent contact with professionals who were trying to help.

Dickinson HO, Beyer FR, Ford GA, Nicolson D, Campbell F, Cook JV, Mason J. Relaxation therapies for the management of primary hypertension in adults. Cochrane Database of Systematic Reviews 2008, Issue 1. Art. No.: CD004935. DOI: 10.1002/14651858.CD004935.pub2

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

Glynn LG, Murphy AW, Smith SM, Schroeder K, Fahey T

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.

Glynn LG, Murphy AW, Smith SM, Schroeder K, Fahey T. Interventions used to improve control of blood pressure in patients with hypertension. Cochrane Database of Systematic Reviews 2010, Issue 3. Art. No.: CD005182. DOI: 10.1002/14651858.CD005182.pub4

CONFLICT OF INTEREST

Authors declare no conflict of interest