



**Low-fat dairy products may protect against high blood pressure**  
**Diuretic therapy not harmful in older adults with metabolic syndrome**  
**Relaxation therapies may help with lowering high blood pressure**

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Dietary intake of low-fat dairy products may protect against the development of high blood pressure (Toledo E, Delgado-Rodriguez M, Estruch R *et al. Br J Nutr* 2008; May 20:1-9 and Wang L, Manson JE, Buring JE *et al. Hypertension* 2008; 51: 1073-1079).

Two recent reports suggest that increased consumption of low fat dairy products may protect against the development of high blood pressure. The first was a cohort study involving 2290 Spanish men and women aged 55 years or over. In this study they found that individuals consuming a high intake of low-fat dairy products had a blood pressure level that was on average 4.2/1.4 mm Hg lower at 12-months follow up. The individuals included were also all consuming a Mediterranean diet and while they had no history of cardiovascular disease were considered to be at elevated risk on the basis of risk factor levels. There was no association of whole-fat dairy product consumption with blood pressure in these patients during the same period.

In the second larger cohort study done in the USA almost 29,000 women aged 45 years and over were included in a very similar analysis. Once again increasing consumption of low-fat dairy products was associated with a decreasing risk of developing high blood pressure. No relationship between consumption of high-fat dairy products and blood pressure was detected. These two studies suggest that consumption of low-fat dairy products could play an important role in the control of individual and population blood pressure levels. However, clear evidence from adequately powered randomised trials would greatly clarify the potential for such an intervention.

**Expert comment**

The results of these two recent studies provide further confirmation of prior epidemiological observations that higher calcium intake is associated with lower blood pressure. An association between dietary calcium and blood pressure has also been reported in meta-analyses of calcium supplementation studies which have shown mean blood pressure lowering effects ranging from zero to 19 mm Hg systolic blood pressure. While calcium supplementation is not recommended for therapeutic blood pressure lowering, it appears more likely to lower than raise blood pressure. The large US Dietary Approaches to Stop Hypertension (DASH) dietary intervention study resulted in an average 5.5/3.0mmHg reduction in blood pressure. The DASH diet was high in fruits and vegetables and low-fat dairy products with reduced saturated fats. The combined nature of the intervention means it is impossible to define the extent to which the inclusion of low-fat dairy products produced the blood pressure reduction observed although it is likely that there were combined effects of several healthy foods included. However, in conjunction with the results of these two new studies it would appear that low-fat dairy products are more likely to produce beneficial than harmful effects on blood pressure. Dairy products are an important source of dietary calcium and low-fat dairy products appear a good option for meeting daily requirements.

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Adverse metabolic effects of thiazide-like diuretics don't translate into greater cardiovascular risks in older patients with the metabolic syndrome (Black HR, Davis B, Barzilay J et al. *Diabetes Care* 2008; 31: 353–360).

The use of thiazide-like diuretics is associated with less favourable metabolic outcomes and a greater risk of diabetes than treatment with an ACE inhibitor or a calcium antagonist. This was true both for patients with and without the metabolic syndrome in the large US-based ALLHAT study. However, these worse metabolic outcomes with thiazide-like diuretics were not associated with worse clinical outcomes. In fact, thiazide-like diuretics actually performed better than an ACE inhibitor for the prevention of heart failure and major cardiovascular events in patients with the metabolic syndrome. Likewise, thiazide-like diuretic therapy also provided greater protection against heart failure than calcium antagonist therapy in patients without metabolic syndrome.

It remains possible that the adverse metabolic effects of thiazide-like diuretics may translate into adverse clinical outcomes in the long-term. Whether these postulated long-term adverse effects will outweigh the superior protection provided by thiazide-like diuretics in the short-term remains to be seen. In the meantime, a thiazide-like diuretic remains an effective initial therapy for high blood pressure in older adults with or without the metabolic syndrome.

***Expert comment***

The use of diuretics in individuals with or at risk of diabetes remains controversial. Although there has been a major emphasis on the potential deleterious effects on metabolic control as a result of treatment with thiazides and thiazide-like diuretics, it is increasingly appreciated that this may have been overstated. In many of these original studies the dose of the diuretics was often much higher than are currently prescribed. Indeed, the most commonly used doses of these agents have not generally been associated with significant effects on metabolic parameters. The recent study by Black *et al* further explores this issue using data from the very large ALLHAT study. As predicted, chlorthalidone, a thiazide-like diuretic, not widely used in general practice, was associated with a less favourable metabolic profile. However, what is particularly reassuring is that this did not lead to, and possibly resulted in better, cardiovascular outcomes than seen with amlodipine or lisinopril in individuals with the metabolic syndrome. One must be cautious in overinterpreting findings as a result of post-hoc analyses of clinical trials. Many hypertensive subjects now receive multiple agents to reduce blood pressure, particularly in the setting of concomitant co-morbidities such as diabetes. Therefore, one of the major findings from this analysis of ALLHAT is that the current drugs that we use for treating blood pressure are clearly improving cardiovascular outcomes. Furthermore, the modest deleterious effects on certain metabolic parameters do not necessarily translate to a negative impact on cardiovascular outcomes, the major relevant clinical endpoint is? studies in individuals considered to have inappropriately elevated blood pressure. However, one must remain cautious since the follow up in trials such as ALLHAT is relatively short in the context that we are managing a condition that will influence cardiovascular events for decades.

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Relaxation therapies may help in the control of high blood pressure (Dickinson HO, Campbell F, Beyer FR *et al. Cochrane Database Syst Rev* 2008; Jan 23(1): CD004935).

In a review of 25 randomised trials involving 1198 patients with blood pressure levels above 140/85 mm Hg, relaxation therapies were found to reduce blood pressure by an average of 5/3 mm Hg compared to control (which was either no treatment or sham treatment not expected to reduce blood pressure).

These effects were achieved on top of other blood pressure lowering therapies used by the patients. A range of different relaxation techniques were used in the 25 trials and it was difficult to say which was the most effective. However, progressive muscle relaxation, cognitive/behavioural therapies and biofeedback seemed more likely to be of benefit than autogenic training (i.e. repetitive mental focus on breathing or heartbeat).

The authors suggest that some of the benefit of relaxation may be explained by aspects of the intervention unrelated to the relaxation therapy itself, such as increased frequency of contact with health professionals. While the findings of the overview were encouraging there was also a clear need for better designed, larger and longer trials that could properly define the efficacy of different relaxation therapies in the management of high blood pressure.

***Expert comment***

The idea of non-pharmacological approaches to lowering blood pressure is popular both with the public and primary health care providers. It is also enshrined in guidelines although stress reduction and relaxation techniques are rarely mentioned. This rigorously conducted Cochrane review greatly extends our knowledge and makes a stronger argument for their inclusion. Overall the various approaches used resulted in a blood pressure reduction (4.6/2.9mmHg) comparable to that reported in trials of physical activity, salt reduction and single drug therapy. None of the trials showed the approaches to be inferior to control or sham intervention although limiting the analysis to higher quality trials diminished the magnitude of the effects observed. Needless to say the overview provides no evidence about the effects of these interventions on major clinical outcomes, although it would be surprising if the blood pressure reductions achieved did not translate into such benefits. With no demonstrable adverse effects and given their popularity with patients, relaxation techniques would seem to be a reasonable adjunct to other strategies for blood pressure lowering in suitably motivated patients. Whether the cost outweighs any potential benefit is a yet unanswered (and possibly unasked) question.

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