



Title	Lowering Blood Pressure to Prevent Myocardial Infarction and Stroke: A New Preventive Strategy
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Aim

- To investigate the screening performance of measuring blood pressure and other variables in identifying those who will develop, or die from, ischemic heart disease and stroke.
- To quantify the extent to which blood pressure lowering drugs will reduce the risk of ischemic heart disease and stroke in those designated 'screen positive'.

Conclusions and results

Lowering blood pressure (BP) by 5 mmHg diastolic reduces the risk of stroke by an estimated 34% and ischemic heart disease by 21% from any pre-treatment level. These estimates, from cohort studies, have been corroborated by the results of randomized trials in persons with high, average, and below average BP levels. Blood pressure is a poor predictor of cardiovascular events. Its poor screening performance is illustrated by findings in the largest cohort study where persons in the top 10% of the distribution of systolic BP experienced only 21% of all ischemic heart disease events and 28% of all strokes at a given age. Combining several reversible risk factors adds little to the screening performance of BP alone, eg, the 25% of men aged 55–64 years at highest computed risk ($\geq 1\%$ per year) experience only 46% of all ischemic heart disease events. The main screening methods should identify everyone with a history of cardiovascular disease events (eg, identifying patients at the time of hospital discharge following a first myocardial infarction (MI) detects 50% of all heart disease deaths in a population at a false positive rate of 12%) and use a person's age. Identifying everyone with a history of MI or stroke in a population and everyone aged 55 years or more would include 98% of all deaths from ischemic heart disease and stroke. The five main categories of blood pressure lowering drugs, ie, thiazides, beta-blockers, angiotensin-converting enzyme (ACE) inhibitors, angiotensin-II receptor antagonists, and calcium channel blockers, significantly reduce BP from all pre-treatment levels

although the extent of the BP reduction increased with pre-treatment BP. The reductions were similar at standard dose for the five categories; average reduction was 9.1 systolic and 5 diastolic. The effect on BP of combining two drugs was additive. No effect of age was apparent. There were no serious metabolic consequences of using these drugs in standard dose.

Recommendations

The evidence indicates that 3 drugs in combination may reduce stroke by about two-thirds and ischemic heart disease by half. The report suggests avoiding the term hypertension since it is not a disease and falsely implies another category ("normotensives") that would not benefit from lowering BP. Since BP reduction using combinations of safe, well-established drugs is effective in preventing cardiovascular events, it is suggested that such preventive therapy be used more widely in people who are at risk of heart attack or stroke regardless of initial BP.

Methods

Relevant cohort studies and randomized trials were identified and analyzed. Statistical analysis was used to determine drug efficacy and adverse effects.

Further research/reviews required

Further research is required on treatment effectiveness and the economic implications of policy options.