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Salt Restriction

The average daily intake of sodium in the US is about 3400 mg. Dietary guidelines recommend reducing it to <2300 mg/day in general, and to 1500 mg for African Americans, persons with hypertension, diabetes or chronic renal disease, and for all those >50 years old.\(^1\) Salt reduction lowers blood pressure, and lowering blood pressure reduces the risk of myocardial infarction, stroke and death.\(^2\)

**EFFECT ON BLOOD PRESSURE** — In one controlled trial in 412 patients, a low sodium diet (1500 mg/day) for 30 days lowered mean systolic blood pressure by 7.1 mm Hg in patients without hypertension and by 11.5 mm Hg in those with hypertension. Patients taking antihypertensive drugs were excluded.\(^3\) A review of 167 studies, mostly small and short-term, found somewhat smaller reductions in systolic blood pressure with a low sodium intake: 1-4 mm Hg in various ethnic groups without hypertension and 6-10 mm Hg in those with hypertension.\(^4\)

**CLINICAL OUTCOMES** — There are no large randomized clinical trials showing that sodium restriction lowers the risk of myocardial infarction, stroke or death. A recent meta-analysis identified only 7 randomized controlled trials of dietary sodium restriction with cardiovascular disease or mortality as an endpoint; the results of the analysis showed no strong evidence of clinical benefit from sodium restriction.\(^5\) Another meta-analysis of 6 of these trials combined hypertensive and normotensive patients and found a significant 20% reduction in cardiovascular events with reduced salt intake and a non-significant 5-7% decrease in overall mortality.\(^6\)

Some prospective observational studies have found an inverse or J-shaped-curve relationship between sodium intake and mortality. Among 3681 patients without cardiovascular disease followed for a median of 7.9 years, the number of cardiovascular deaths decreased as 24-hour sodium excretion increased.\(^7\) Among 28,880 patients with cardiovascular disease or diabetes followed for a median of 56 months, sodium excretion <3 grams/day or >7 grams/day was associated with an increased risk of cardiovascular mortality.\(^8\)

**SALT SENSITIVITY** — Normal kidneys accommodate vast increases in sodium intake without changes in blood pressure. The individual blood pressure response to sodium restriction in normotensive patients is heterogeneous; some show no effect, and some show an increase or a decrease in blood pressure.\(^9\)

**CONCLUSION** — Reducing sodium intake can lower blood pressure in both normotensive and hypertensive patients. There is no direct evidence that it reduces cardiovascular mortality.
