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**EFFECT OF WEIGHT REDUCTION AND SODIUM RESTRICTION/POTASSIUM SUPPLEMENTATION ON THE LONG-TERM CONTROL OF BLOOD PRESSURE (FINAL RESULTS OF THE TAIM CLINICAL TRIAL).** M.D. Blaufox,\*, presented on behalf of the TAIM Study Group. Albert Einstein College of Medicine, Bronx, N.Y.

The Trial of Antihypertensive Interventions and Management (TAIM) was a multicenter randomized drug (double blind placebo) controlled clinical trial. Five hundred eighty seven persons age 21-65 years, 110-160% ideal weight, with diastolic BP 90-100 mm Hg were followed for a mean of 4.5 years. During the 5 years of follow up the 5 year incidence of treatment failure was 56.7/100 participants for those individuals assigned to usual diet and 49.8/100 for those assigned to weight loss. The relative risk of treatment failure on weight loss was 0.77 compared to usual diet (P=0.04). Two hundred ninety one of the participants were additionally stratified to low sodium/high potassium diet. During 3/5 years of follow up there was no significant difference in treatment failure between the usual diet and low sodium/high potassium group. However, in patients whose median percent ideal weight was less than 129%, the relative risk achieved with a low sodium/high potassium diet was 0.67 (P=0.04).

Weight reduction in these overweight persons with mild hypertension reduced risk of treatment failure by 23%. Although there was no benefit demonstrated in the overall group of a low sodium/high potassium diet in the long-term, the results suggest that less obese persons (less than 129% ideal weight) have a reduced likelihood of treatment failure when additionally placed on a low sodium high/potassium diet.

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93-17-A

**LOW LEVEL EXPOSURE TO LEAD DOES NOT INCREASE BLOOD PRESSURE IN THE POPULATION AT LARGE.**

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This report investigated the association between blood pressure and lead exposure in 1648 subjects (827 men and 821 women; mean age 45 years), who were drawn at random from the general population and who were not treated for hypertension.

Systolic/diastolic pressure averaged 131/77 mmHg in men, and 124/74 mmHg in women. Blood lead was higher in men than women (0.54 vs 0.34  $\mu\text{mol/l}$ ,  $p < 0.001$ ). Total serum calcium was similar in both sexes (2.37 mmol/l).

After adjustment for significant covariates (age, body mass index, pulse rate, serum creatinine and serum calcium and in women contraceptive pill intake and menopause), systolic pressure was negatively correlated with blood lead in men ( $p < 0.05$ ). After similar adjustments the partial correlations with blood lead were not significant for systolic pressure in women and for diastolic pressure in both sexes. After excluding men exposed at work, the partial correlations between systolic and diastolic pressure and blood lead were negative ( $p < 0.05$ ). In neither men nor women the partial correlations between blood pressure and lead exposure assessed from zinc protoporphyrin did reach statistical significance.

In conclusion, this study does not support the hypothesis that lead exposure is associated with an increased blood pressure in the population at large.

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93-18-A

**HYPERTENSION CAUSED BY LOW-LEVEL LEAD EXPOSURE: MYTH OR FACT?**

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Several reports on the possible association between low-level lead exposure and blood pressure reflect diverging views. This meta-analysis searched for a common ground in the published literature and attempted to estimate the strength of the relationship between blood pressure and blood lead.

Of 29 reviewed studies 18 provided sufficient details to be considered. The overall analysis included up to 27934 subjects, who were recruited from the general population in 10 surveys and from professional groups in 8 studies. In all but 2 studies the results were adjusted for age, and most studies also considered additional confounders. In all groups combined a doubling of blood lead was associated ( $P < 0.001$ ) with an increase in systolic pressure by 1.4 mmHg (95% confidence interval: 0.8 to 2.0 mmHg) and with an increase in diastolic pressure by 0.5 mmHg (0.1 to 0.9 mmHg). The association between blood pressure and blood lead across studies was less consistent for diastolic than for systolic pressure. The pooled effect of diastolic pressure only achieved significance if one strongly positive survey (NHANES II) was included in the analysis. The effect size also tended to be greater in men than in women, but was not dependent on the mean blood lead concentration in individual studies.

On balance the available evidence suggests that there is a weak positive correlation between systolic pressure and blood lead. Whether this association is causal and whether it has any public health implication in terms of morbidity has not yet been established.

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**METHODOLOGIC COMPARISON OF AMBULATORY (ABP) AND OFFICE BLOOD PRESSURE (OBP) IN A GENERAL POPULATION OF MEN.** R. Grimm, K. Ensrud, K. Pearce, K. McKenzie. Division of Cardiovascular Diseases, and Division of General Medicine, University of Minnesota, and VA Medical Center, Minneapolis, MN

Ambulatory BP is a common method of assessing BP for research and in clinical practice. Past studies of ABP have been primarily carried out on hypertensives. Comparisons of ABP and OBP are difficult in hypertensives due to regression toward the mean. This study examines ABP and OBP in 80 men ages 51-72 from a general population base of MRFIT screenees, originally contacted between 1973-1975 in a census tract survey. These men were seen again in 1991. All were included regardless of BP treatment status. OBPs were measured using a random zero device at 6 clinic visits (2/visit) over a 6-week period. ABP was measured using Spacelabs models 90207 during two 24-hour sessions. Calibration of ABP was done each visit.

Results: OBP over 6 clinic visits averaged  $122 \pm 15$  and  $73 \pm 10$ ; 24 hour ABP averaged  $126 \pm 12$  and  $77 \pm 7$ . Awake ABP averaged  $131 \pm 13$  and  $81 \pm 7$ . OBP averaged over 6 visits correlated best with awake ABP. Three office visits provided a good estimate of 24 hour ABP; correlation was .92 systolic and .89 diastolic (reliability coefficient). For all 6 clinic visits .96 systolic and .94 diastolic. The second ABP only marginally improved the reliability coefficient (RC):

	RC
ABP Readings	1 .93
	2 .96
	1 .92
	2 .95

ABP is an excellent means to measure BP and categorize an individual's pressure. OBP from 3 visits provides most the information as 1 ABP. High correlations of SBP and DBP between OBP and ABP over all visits suggest they are essentially measuring the same thing. Two measures of ABP do not add significantly to the RC.