

# UPDATES FROM US HEALTH AGENCIES

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Recent activity in government and non-government agencies may affect readers of *Ethnicity & Disease* and other healthcare professionals working with ethnic minority and under-served populations. Below are some current items of interest.

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## FROM THE NATIONAL HEART, LUNG, AND BLOOD INSTITUTE (NHLBI)

### Researchers Uncover Genetic Clues to Blood Pressure

An international research team has identified a number of unsuspected genetic variants associated with systolic blood pressure (SBP), diastolic blood pressure (DBP), and hypertension, suggesting potential avenues of investigation for the prevention or treatment of hypertension. Approximately 1 in 3 adults ( $\approx 72$  million people) in the United States has high blood pressure. Hypertension can lead to coronary heart disease, heart failure, stroke, kidney failure, and other health problems, and causes more than 7 million deaths worldwide each year. Blood pressure has a substantial

genetic component, and hypertension runs in families. Previous attempts to identify genes associated with blood pressure, however, have met with limited success.

In a genome-wide association study (GWAS), researchers scanned millions of common genetic variants of individuals from the Cohorts for Heart and Aging Research in Genomic Epidemiology (CHARGE) consortium to find variants associated with blood pressure and hypertension. This extensive resource includes White men and women from the Framingham Heart Study, Atherosclerosis

Risk in Communities study, Cardiovascular Health Study, the Rotterdam Study, the Rotterdam Extension Study, and the Age, Gene/Environment Susceptibility Reykjavik Study.

The investigators identified a number of genetic variants associated with SBP, DBP, and hypertension. When they jointly analyzed their findings with those from the GWAS of more than 34,000 participants in the Global BPgen Consortium, they identified 11 genes showing significant associations across the genome: 4 for SBP, 6 for DBP, and 1 for hypertension.

The blood pressure genes include ATP2B1, which encodes PMCA1, a cell membrane enzyme that is involved in calcium

transport; CACNB2, which encodes part of a calcium channel protein; and CYP17A1, which encodes an enzyme that is necessary for steroid production. One detected variant is within the gene SH2B3 and has been associated with autoimmune diseases, hinting that pathways involved with the immune response may influence blood pressure. Researchers found that the top 10 gene variants were each associated with around a 1- and 0.5-mm Hg increase in SBP and DBP, respectively. The prevalence of hypertension increased as the number of variants increased.

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## FROM THE NATIONAL HEART, LUNG, AND BLOOD INSTITUTE (NHLBI)

### Researchers Discover New Genetic Variants Associated with Increased Risk of Stroke

Scientists have identified a previously unknown connection between 2 genetic variants and an increased risk of stroke, providing strong evidence for the existence of specific genes that help explain the genetic component of stroke. The ge-

netic variants were discovered by analyzing the genomes of individuals from the CHARGE (Cohorts for Heart and Aging Research in Genomic Epidemiology) consortium.

The researchers discovered that two previously unsuspected

common genetic variants were consistently associated with total stroke (all types) and ischemic stroke in White participants. The variants were located on chromosome 12p13 near the gene NINJ2, which encodes ninjurin2, a member of the ninjurin nerve-injury-induced protein family.

The association of one of the genetic variants was replicated in

2 independent samples: North American Blacks and Dutch Whites. The association held when the analyses were adjusted for systolic blood pressure, hypertension, diabetes, atrial fibrillation, and smoking.

“Discovering genes for stroke has been a challenge in part because there are many different types of stroke. These

results provide strong evidence for a previously unknown gene that may predispose to stroke and suggests that more genes

will be discovered—improving our chances of reducing the toll from this important public health problem,” said

Christopher O’Donnell, MD, MPH, senior advisor to the NHLBI director for genome research and associate director

of the Framingham Heart Study.

**FROM THE NATIONAL HEART, LUNG, AND BLOOD INSTITUTE (NHLBI)**

**Exercise Is Safe, Improves Quality of Life in Patients with Chronic Heart Failure**

Regular exercise is safe for heart failure patients and may slightly lower their risk of death or hospitalization, according to results from the largest and most comprehensive clinical trial to examine the effects of exercise in chronic heart failure patients. The study also found that heart failure patients who add regular, moderate physical activity to standard medical therapy report a higher quality of life than do similar patients who receive medical therapy only.

“Many patients and health-care providers have continued to be concerned about the safety of aerobic exercise for heart failure,” said NHLBI Director Elizabeth G. Nabel, MD. “With the results of this robust clinical trial, we can now reassure heart failure patients that, with appropriate medical

supervision, regular aerobic exercise is not only safe but it can also improve their lives in really meaningful ways.”

Earlier, smaller clinical trials have suggested that exercise is beneficial for heart failure patients, and clinical guidelines recommend moderate exercise for this condition. Nonetheless, safety concerns have persisted. The trial followed 2331 patients with moderate-to-severe systolic heart failure (average age 59) for up to 4 years (average of 2.5 years). Approximately one-half of the participants were randomly assigned to receive usual care alone, which included medical and device therapy as prescribed by their physicians and educational materials on disease management. They were also asked to engage in 30 minutes of mod-

erate physical activity on most days of the week.

The other half of the participants were in the exercise-training group, and they received usual care plus 36 sessions of group-based, supervised aerobic exercise training (walking or stationary cycling) of up to 35 minutes three times per week. These participants were asked to transition to home-based training at the same intensity five times per week for the remainder of the study and received a treadmill or stationary bike for home use and a heart rate monitor.

Compared with the usual care group, the exercise-training group had slightly fewer (statistically nonsignificant) deaths or hospitalizations from any cause. When researchers adjusted the findings (as specified in the study design) for the strongest predictors of death or hospitalization—initial exercise capacity,

history of atrial fibrillation, depression, cardiac pumping function, and cause of heart failure—exercise training was linked to an 11% lower risk of all-cause death or hospitalization and a 15% lower risk of cardiovascular-related death or heart failure hospitalization. In addition, there was no significant difference in serious adverse events between the two groups, such as an abnormal heart rhythm, hip fracture, or hospitalization related to exercise, suggesting that exercise training was well tolerated and safe.

The researchers note that the benefits of exercise may be underestimated by the observed study results because many of the usual care participants also exercised. In addition, adherence to prescribed exercise in the exercise-training group was below goal in most participants.