From the Director:  

Dear Friend of the Cardiovascular Institute:  

High blood pressure (hypertension) is the most common risk factor for heart attack, stroke and heart failure. Hypertension also contributes to the development of aneurysms and kidney disease especially when combined with diabetes. Ninety percent of us will get hypertension as we age and 7 out of 10 men and women over the age of 70 have this condition. A good lifestyle (normal body weight, low salt intake, exercise, and avoidance of smoking and excessive alcohol intake) is important in all patients with hypertension. However, most patients sooner or later require drug therapy. There is proof that antihypertensive pharmacologic therapy decreases mortal and morbidity clinical events. This was observed in many clinical trials using a variety of medications. However, these studies lasted no longer than five years and there is no study with long-term follow up.

The great majority of older patients with hypertension have isolated systolic hypertension (high systolic [top number] and normal or low diastolic [bottom number] blood pressure). The Systolic Hypertension in the Elderly Program (SHEP), carried out by faculty and staff of the Cardiovascular Institute (CVI) and 15 other centers, proved that treatment of this condition for 4.5 years prevented 1 out of 2 hospital admissions for heart failure, 1 out of 3 strokes and 1 out of 4 heart attacks; but there was no significant benefit in mortality and nobody knew whether the benefit persisted for a long time.

Examining the 22-year follow-up data by the use of advanced, innovative statistical methods, Javier Cabrera, PhD, a member of the CVI, answered these questions. Dr. Cabrera showed that the benefit of blood pressure lowering medications persists for up to 22 years and that for every month of treatment life expectancy free from death from cardiovascular causes is prolonged by one day or by about a year for three decades of therapy. This study was supported by the National Heart, Lung, and Blood Institute and the National Institute on Aging, both of the National Institutes of Health, and the Robert Wood Johnson Foundation.

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Faculty Profile

Javier Cabrera, Ph.D.

Javier Cabrera, PhD, is professor of Statistics and Biostatistics at Rutgers University and is a Fulbright Fellow and Henry Rutgers Fellow. Dr. Cabrera served as director of the Institute of Biostatistics from 2004-2011 and is funded by the National Science Foundation, Pfizer, Johnson & Johnson, Novartis and Eisai. In 2010, he received the prestigious Statistical Partnerships among Academe, Industry, and Government (SPAIG) award from the American Statistical Association for establishing collaboration between Pfizer and Rutgers.

Dr. Cabrera’s research interests include data mining methods for clinical data, functional genomics, DNA and protein microarray data mining, DNA barcode data mining, statistical computing and graphics, and computer vision. He received his doctorate from Princeton University and has lectured in statistics at Rutgers University, the National University of Singapore and the Hong Kong University of Science & Technology. He has authored and co-authored many publications in the areas of data mining and functional genomics, including a book on exploration and analysis of DNA microarray and protein array data. Dr. Cabrera also holds a patent on a system for predicting the risk of coronary artery disease from phenotype and genotype data.

Working at the Cardiovascular Institute, Dr. Cabrera addressed the benefit of antihypertensive therapy. Using data from the landmark clinical trial, Systolic Hypertension in the Elderly Program (SHEP), he estimated the net gain in life expectancy free from cardiovascular death in the active therapy group by calculating the difference in the survival curves of the active blood pressure medical group and the placebo (sugar pills) group. He also estimated the difference in time when 30 percent of the participants in SHEP had died. He found that at the 22-year follow-up, antihypertensive therapy for 4.5 years resulted in prolongation of life expectancy free from cardiovascular death by one day for each month of treatment. In addition, the time when 30 percent of the participants died from cardiovascular causes was prolonged by 1.4 years.

For more information, please contact Dr. Cabrera at 732-235-6546.