Prof. Heagerty explained the role of visit-to-visit BP variability in guideline improvement and treatment optimization. Ambulatory BP monitoring may be too narrow a focus and may not identify those at highest risk. Emphasis should be on consistency of BP control and stabilization in order to properly assess risk and manage HT. The incorporation of visit-to-visit variability into treatment guidelines will provide more accurate risk prediction and will broaden the focus of new drug development to include BP-stabilizing medications, which may be better suited to prevent stroke than currently recommended approaches.

Though current guidelines are useful for determining an appropriate treatment strategy for a variety of hypertensive patients, there appear to be gaps in these recommendations that are related to BP variability and associated risk. Further prognostic studies are warranted before BP variability can be incorporated into guidelines and clinical practice. A quantitative assessment algorithm is also needed to ensure that the BP variability treatment approaches are reliable and accurate for future widespread use. Recent data regarding this aspect of HT are promising, but it would be premature to alter strategies at this time, based on the limited available data.

The Risk of Exercise-Related Sudden Death in Hypertensive Patients

The risk-versus-benefit that is associated with sports in patients with hypertension has received a great deal of attention over the past several years, particularly related to sudden cardiac death in hypertensive athletes. While exercise is associated with lower overall cardiovascular morbidity and mortality, the risk of sudden death is increased during or immediately after exertion. Robert Fagard, MD, PhD, KU Leuven University, Leuven, Belgium, discussed this paradox and what we now know about risk in this population.

The risk of exercise-related sudden death is higher among men (vs women), and this risk increases with age and exercise intensity. The gender disparity may be explained by the lower study participation rates, lower intensity of sports activities, and lower prevalence of ischemic heart disease for women compared with men. There are risk factors that appear to contribute to exercise-related sudden death such as hypertension, hypercholesterolemia, smoking, and preexisting heart disease/cardiovascular abnormalities. Atherosclerotic coronary artery disease is commonly found in victims of exercise related sudden death aged above 35 years (~75% of cases). Congenital heart disease, such as hypertrophic cardiomyopathy (~33% of cases) and anomalies of the coronary arteries, are often found in younger patients aged under 35 years. However, 30% to 75% of victims report at least one prodromal symptoms prior to the incident of exercise-related sudden death. Therefore, there may be an opportunity to prevent exercise-related mortality by paying close attention to prodromal symptoms such as chest discomfort or pain, angina pectoris, impaired exercise tolerance, fatigue, dizziness, syncope, arrhythmias, and stomach aches [Fagard R, Staessen J, Vanhees L, Amery A. In: Sports Cardiology eds. Fagard RH & Bekaert IE, Martinus Nijhoff Publishers, 1986].

According to results from the LIFE study, evaluating physical activity in patients with hypertension and left ventricular hypertrophy, modest exercise (>30 minutes twice weekly) significantly reduced the risk of cardiovascular death, stroke, myocardial infarction (MI), and all-cause mortality [Fossum E et al. *J Intern Med* 2007]. In an earlier study by Myers and colleagues, low exercise capacity was found to be a powerful predictor of mortality, independent from other risk factors for cardiovascular disease, including hypertension [Myers J et al. *N Engl J Med* 2002].

Aerobic endurance training and dynamic resistance training may decrease blood pressure and have a favorable impact on other cardiovascular risk factors, but there are diagnostic measurements that may assist with risk management for hypertensive patients prior to athletic participation [Cornelissen VA & Fagard RH. *Hypertension* 2005]. ESH-ESC guidelines recommend a comprehensive diagnostic evaluation, including history and physical examination, blood pressure monitoring, blood panel (hemoglobin, hematocrit, potassium, creatinine, uric acid, glucose, and lipids), urine panel (microscopic, glucose, and protein analysis), and electrocardiography, with additional tests based on these findings and the severity of hypertension [ESH-ESC Guidelines. *J Hypertension* 2007]. Clinicians should also consider echocardiography and exercise testing with ECG and blood pressure monitoring, and extended evaluation in cases of associated clinical conditions, for competitive athletes with hypertension, and further pretraining screening, including ECG, exercise testing, and holter monitoring, dependent upon intensity of anticipated exercise, disease risk, and associated clinical conditions or symptoms, for hypertensive patients who intend to participate in recreational sports.

Sports and physical activity can be beneficial in hypertensive patients, provided that concomitant risk is determined prior to participation in such activities. The rate of exercise-related mortality may be reduced if proper attention is given to preexisting risk and prodromal symptoms. Clinicians should also consider evaluating individual patient risk according to ESH/ESC guidelines, symptoms, and further prescreening results before making exercise recommendations.