Rebuttal: PRO Position

People with Chronic Kidney Disease Should Have a Blood Pressure Lower than 130/80 mm Hg

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Dr. Agarwal reviews the literature on this topic and concludes that not all patients with CKD should have a systolic BP <130 mm Hg. This conclusion is based largely on interpretation of published randomized clinical trials that have examined renal outcomes only. Whereas this is noble and certainly considered the highest quality of evidence for modification of clinical practice guidelines, he does not consider the totality of the evidence for more aggressive BP control among those with CKD. It is true that 2 of the 3 clinical trials cited by Dr. Agarwal, MDRD and REIN-2, did not show an important difference in renal outcome among those randomized to more aggressive BP control. Both of these trials were short lived. In contrast, as stated in my review of the literature, long-term follow-up of both the MDRD and the AASK trials demonstrate that lower BP target assignment and lower achieved BP level were associated with reduction in ESRD events, particularly among those with proteinuria at baseline above 300 mg/g. In addition, Dr. Agarwal fails to consider all of the evidence regarding BP control and renal and cardiovascular outcomes, particularly from important observational studies that heavily influence the current clinical practice guidelines for treatment of hypertension. In particular, Dr. Agarwal fails to consider the analysis by Lewington with respect to systolic BP and cardiovascular events that included more than 1 million patients with comorbidities to be impor-

tant (e.g. hypertension and diabetes) [1]. For example, this analysis included data on BP and outcome from both the Atherosclerosis Risks in Communities Study and the Multiple Risk Factor Intervention Trial, both of which included participants with CKD. The analysis clearly showed a continuous decrease in cardiovascular mortality with decreasing BP <130 and down to 115 mm Hg. Moreover, Dr. Agarwal fails to recognize the study by Gaede et al. [2] demonstrating the beneficial effect of lowering systolic BP <130 mm Hg on renal and cardiovascular outcomes among patients with type 2 diabetes and CKD manifest by hypertension and persistent microalbuminuria [3]. Dr. Agarwal's argument that systolic BP <130 mm Hg has no support among those with stage 5 kidney disease is a rather weak one given the small size of this population as compared to those with earlier stages of CKD. Those with stage 5 CKD represent less than 1.2% of the estimated United States CKD population. Furthermore, the argument that white coat hypertension is common does not apply to many patients with CKD. In fact, Pogue et al. [4], using ambulatory and clinic BP measurements found that among those with CKD attributed to hypertensive nephrosclerosis, the second leading cause of ESRD in the United States, masked hypertension was present in 40% and either masked hypertension or non-dipping of nocturnal BP was present in 80%.

Clinicians must make individual decisions on the management of patients with hypertension and take into account a variety of medical, environmental and social factors when determining the optimal BP control for a given patient. While we await further clinical trials aimed at whether more aggressive BP control saves kidneys, saves lives and reduces cardiovascular morbidity, we should consider the totality of the evidence when approaching our patients with CKD.

References

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- 2 Gaede P, Lund-Andersen H, Parving HH, Pedersen O: Effect of a multifactorial intervention on mortality in type 2 diabetes. *N Engl J Med* 2008;358:580–591.
- 3 National Kidney F supplement: clinical practice guidelines and clinical practice recommendations for diabetes and chronic kidney disease. *Am J Kidney Dis* 2007;49:S1–S123.
- 4 Pogue V, Rahman M, Lipkowitz M, Toto R, Miller E, Faulkner M, Ros-tand S, Hiremath L, Sika M, Kendrick C, Hu B, Greene T, Appel L, Phillips RA: Disparate estimates of hypertension control from ambulatory and clinic blood pressure measurements in hypertensive kidney disease. *Hypertension* 2009;53:20–27.