Hypertension

EDITORIAL

Race and Antihypertensive Drug Therapy: Edging Closer to a New Paradigm

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The principal approach to successful hypertension therapeutics is to control blood pressure using dietary and lifestyle changes plus an adequate intensity of drug therapy; the patient must be comfortable with, accept and tolerate the prescribed therapeutics, and the practitioner and their team should engage the patient in therapeutic decisions and avoid therapeutic inertia when blood pressure remains above goal. The elusive goal of our efforts is the attainment of exemplary hypertension control rates with no, to at most minimal, demographic disparities. The reporting of national hypertension control rates overall as well as for various race/ethnicity groups[1] provides important information about the success in control of this pervasive clinical problem and whether we have achieved parity across various demographic groups.

See related article, pp 338–348

So how are we doing? Well, not very good. Hypertension control rates have fallen since 2014 and racial disparities have persisted.[2] Race has long been used to guide monotherapy drug selections,[3,4] in part, because of lesser average blood pressure response to angiotensin converting enzyme (ACE) inhibitors, angiotensin receptor blocker (ARBs), and beta blockers in Black compared with White hypertensives. And also, because among Black hypertensives, thiazide diuretics and calcium antagonists have shown greater average blood pressure responses than other monotherapies.

The excellent article in this issue of the journal by Egan et al[5] reported on self-reported antihypertensive medication use in Black and White adults and their temporal relationship to hypertension treatment guidelines. National Health and Nutrition Examination Survey (NHANES) data spanning 2 time periods were contrasted (2007–2012 versus 2015–2018). Among Black hypertensives taking antihypertensive medications, calcium antagonist or thiazide-like diuretic therapy rates remain unchanged while calcium antagonist use increased in the later time period. Renin angiotensin system blocker (ACE inhibitors or ARBs) use in Black hypertensives declined dramatically in the later time period. Thus, the authors showed greater use of recommended evidence-based monotherapy and yet concluded that evidence-based monotherapy appears insufficient to improve hypertension control in non-Hispanic Black adults, especially given evidence for worsening therapeutic inertia. This statement builds on another NHANES analysis[1] which documented lower overall control rates (<140/90 mm Hg) for Black compared with White hypertensives (41.5% versus 48.2%) during the 2015–2018 time period; also, overall hypertension control rates have declined since 2014 in both Black and White hypertensives. Control rates fell from 46.3% to 38.5% in Black hypertensives and from 57.3% to 45.2% in White hypertensives between the 2013 to 2014 and 2017 to 2018 time periods. Among those self-reporting use of antihypertensive medications hypertension control rates were also lower in Black than in White hypertensives (55.6% versus 69.3%) during the 2015 to 2018 time period. Thus, the greater use of recommended evidence-based monotherapy coincided with a decline in hypertension control in Black hypertensives, and though hypertension control rates simultaneously fell in White hypertensives, the control rate in Black hypertensives was a staggering 14% lower in those undergoing pharmacological treatment.

These data make the case that we are unequivocally losing ground in our fight to control hypertension.

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Moreover, these data show that we are not closing the racial disparity in hypertension control despite the use of more evidence-based monotherapies in Black hypertensives. It is informative to briefly critique the evidence that led to the recommendations for diuretics and calcium antagonists to be preferentially prescribed to Black hypertensives as well as to opine as to whether there is justification for the continued use of Black race to inform the selection of antihypertensive drug therapy.

We previously published an ACE inhibitor (quinapril) monotherapy study[6] that, similar to other previously published studies, reported a larger (4.7/2.4 mm Hg) blood pressure reduction in White compared with Black hypertensives. However, as shown in Figure, the racial systolic blood pressure distributions, though shifted in their central tendency, heavily overlapped. The spread of blood pressure responses within each group (interquartile range) was ≈4-fold greater than the between-race difference in systolic blood pressure response. Moreover, both groups were well above contemporary blood pressure targets (<130/80 mm Hg) at the end of the treatment period. The Antihypertensive and Lipid Lowering Treatment to Prevent Heart Attack (ALLHAT)[7] clinical trial showed that Black hypertensives had a lesser systolic blood pressure response to the ACE inhibitor lisinopril than to chlorthalidone by ≈4 to 5 mm Hg over follow-up; the average systolic blood pressure response to lisinopril in Black hypertensives was ≈5 to 6 mm Hg lower over follow-up than in White hypertensives. Stroke, combined coronary heart disease, and combined cardiovascular disease were, respectively, 40%, 15%, and 19% higher in Black hypertensives randomized to the lisinopril compared with chlorthalidone arm; in White hypertensives there was no difference for this treatment contrast in these same outcomes except for a 6% higher combined cardiovascular disease in the lisinopril arm. So do these data assist in therapeutic decision-making for Black hypertensives? The answer is a qualified yes—but only if the focus is on monotherapy, an approach that is woefully inadequate for hypertension control in any demographic group. In the quinapril study, systolic blood pressure responses were more dissimilar within than between racial groups. In ALLHAT, the use of effective combination drug therapies that eliminate racial blood pressure response disparities were not allowed.

The authors do, however, defend the value of making race-specific drug monotherapy drug selections because of previously identified average racial differences in blood pressure response, high rates of therapeutic inertia, and delays in follow-up in uncontrolled hypertensive patients.[5] However, we take issue with this position because if race-specific approaches to monotherapy were effective for improving hypertension control rates in Black hypertensives and closing/eliminating racial disparities in hypertension control, it would have already happened, especially given the authors own findings that race-specific monotherapy recommendations are being increasingly followed. Furthermore, adhering to race-specific monotherapy recommendations is not synonymous with optimal application of the American College of Cardiology/American Heart Association hypertension guidelines. The American College of Cardiology/American Heart Association hypertension guideline recommends combination drug therapy

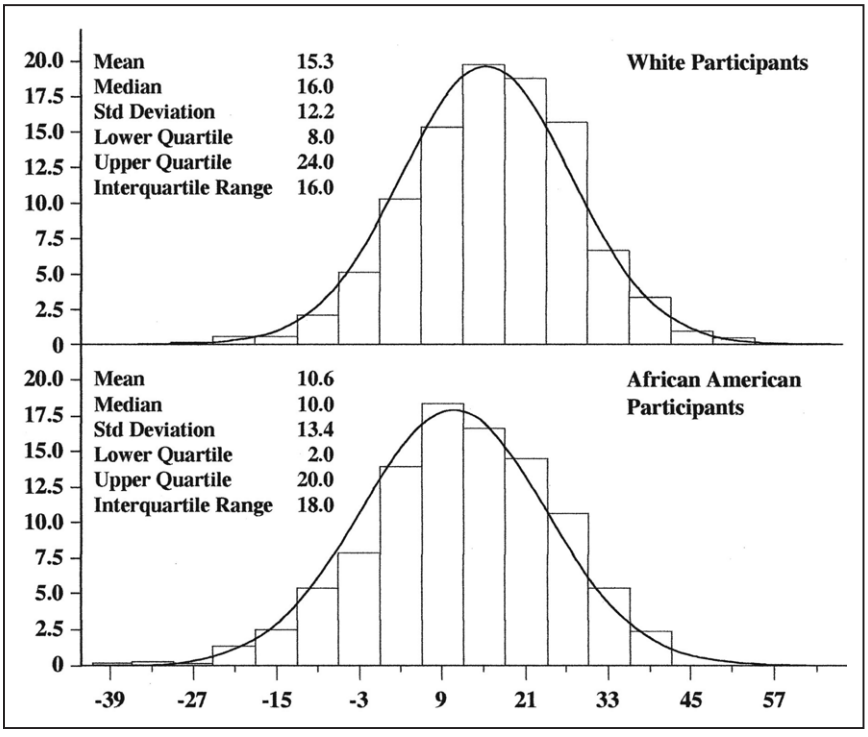

Figure. The frequency distributions of systolic blood pressure (BP) responses to treatment for Black and White participants.
Response values for individual participants were averaged over the duration of follow-up (1–3 visits). *x* axis units=mm Hg; negative numbers indicate a lesser BP response; positive numbers indicate a greater reduction in BP.

for most Black hypertensives, in addition to those with blood pressure >20/10 mm Hg above goal and those with stage 2 hypertension.[4] Recent national data suggests combination therapy is not widely applied as substantial under-treatment in drug-treated hypertensives has been observed as ≈40% and 35%, respectively, are taking 1 and 2 drugs.[8] Among drug-treated hypertensives with blood pressure ≥ 140/90 mm Hg, 40.2% were taking a single antihypertensive drug. The guideline recommendation for initial treatment with combination therapy, if more broadly embraced, would dramatically reduce the proportion of hypertensives taking single drug therapy, increase the likelihood of blood pressure control in those prescribed monotherapy and would substantively improve hypertension control rates across racial groups, but particularly in Black hypertensives.

Exemplary hypertension control programs in clinical settings provide examples of how rigorously applied protocols can improve blood pressure control while reducing racial disparities. The Kaiser Permanente program[9] achieves >80% control (<140/90 mm Hg) in both Black and White hypertensives with a low single digit racial disparity in control. Key features of this program are that it is a multi-level team-based approach that is race-informed in the domains of communication and self-management. However, their therapeutic treatment algorithms are agnostic to race/ethnicity. Their successful approach is further justified by the following: (1) the Black:White paradigm of hypertension treatment applies to an increasingly smaller percentage of the hypertension population given changes in population demographics and treatment recommendations and (2) their approach simplifies and adapts complex and highly detailed hypertension guidelines for local use in all patients. The Veterans Administration health care system also has implemented a comprehensive hypertension control program focused on communication and treatment monitoring and adherence that has produced hypertension control rates approaching 80% with Black:White disparities on control that are only slightly greater compared with Kaiser Permanente, but very low relative to national data.[10]

The time has come to shift the focus from race-specific monotherapy treatment recommendations by adopting comprehensive team-based multi-level care models that use race-informed communication, self-care, and dietary strategies coupled with race-agnostic treatment algorithms that minimize therapeutic inertia and promote prescription of an adequate intensity of drug therapy. Recommending optimization of pervasively used monotherapy for Black hypertensives, a thus far unsuccessful strategy, offers no opportunity for improving hypertension control for all patients while eliminating racial disparities in the same. The evidence documenting racial disparities in drug responses is neither synonymous with the best practices nor is it a necessary component of exemplary hypertension control programs.

ARTCILE INFORMATION

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