

A rigorous, transparent process for developing and reviewing guidelines matters a great deal because guidelines are increasingly driving the practice of medicine. This Editorial focuses on the external review process for the hypertension guideline because it raised some concerns. The panel addressed them head-on by agreeing to share its record of the review process with anyone who asks. Reading the critiques and responses, many readers will conclude that the panel was on solid ground in its interpretation of high-quality evidence about the limited but important set of questions that it chose to ad-

dress. However, a discussion of external review should include several additional questions. Should guideline users shun a guideline that has not been posted in draft form for public comment per the practice of the US Preventive Services Task Force? Have practice guidelines become so important that they require a review process managed by an impartial third party, like that used by the National Academies? The answers to those questions await public debate. Meanwhile, the panel's decision to open the review process to public scrutiny challenges other guidelines programs to follow suit.

#### ARTICLE INFORMATION

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## Recommendations for Treating Hypertension What Are the Right Goals and Purposes?

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**Hypertension is the most common** cardiovascular risk factor in the United States, affecting approximately two-thirds of adults aged 60 years or older.<sup>1</sup> Observational studies have demonstrated a linear relationship between blood pressure (BP) and risk of cardiovascular events. Randomized controlled trials (RCTs) have found that lowering BP by as little as 10 mm Hg in patients with hypertension can reduce a person's lifetime risk for cardiovascular and stroke death by 25% to 40%.<sup>2</sup> Yet for such a common and treatable condition, the ideal treatment goal remains uncertain—both overall and as a function of a patient's age. Compared with younger patients, older patients with hypertension are at increased risk for cardiovascular and stroke events yet are more vulnerable

to complications related to pharmacological treatment of hypertension.

The last Joint National Committee (JNC 7) Guideline, sponsored by the National Heart, Lung, and Blood Institute (NHLBI), was released more than a decade ago.<sup>3</sup> The updated recommendations for management of high blood pressure from the panel members appointed to the JNC 8 Committee was launched 5 years ago. The process used in the most recent update differed from the prior guideline by focusing on select clinical questions that were to be answered solely using evidence from RCTs. Despite this empirical approach, the panel's summary recommendations were ultimately not sanctioned by the NHLBI. The panel's report is now published in *JAMA* as a stand-alone document,<sup>4</sup> and it remains unclear as to whether, or when, or by whom another consensus national hypertension guideline will again be formulated.

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Where does this leave practitioners, patients, and policy makers? The major difference between the JNC 7 report and the current panel recommendations centers on whether target BP treatment goals should be more conservative (ie, set higher) in older vs younger populations. Specifically, JNC 7 concluded that all adult patients with hypertension (regardless of their age) should have their BP reduced to a systolic BP (SBP) of lower than 140 mm Hg, with even tighter control in patients with diabetes or renal disease (SBP <130 mm Hg). In contrast, the current recommendation raises target SBP goals to 150 mm Hg or lower in those aged 60 years or older, while eliminating the tighter control recommendations in patients with diabetes and renal disease.

How the panel selected these treatment goals depended in part on how existing trial evidence (or lack thereof) was interpreted. Prior guidelines were generally based on the totality of evidence, including observational studies, RCTs, and meta-analyses, as well as expert opinion. Noting that the risks for cardiovascular events in untreated adults increased rapidly as SBP was elevated beyond 140 mm Hg, experts defined hypertension and its treatment targets at this level. Nevertheless, direct RCT evidence to support this threshold is limited. The original hypertension RCTs were selective and generally excluded elderly patients. Later trials that focused specifically on older populations found that treating isolated SBP was beneficial, yet these trials had treatment intervention targets of SBP lower than 160 mm Hg.<sup>4</sup> More recently, 2 Japanese RCTs directly compared a more intensive treatment strategy (lowering SBP <140 mm Hg) vs a more conservative one (<150 mm Hg) among older patients (≥65 years).<sup>5,6</sup> Neither trial found a significant difference in the primary outcome, yet both trials had relatively short follow-up and limited overall power to exclude a clinically meaningful difference in outcomes. The evidence gap for patients younger than 60 years is even more profound because no RCTs have specifically addressed ideal SBP targets in this age group.

These limitations in the available RCT evidence pool created challenges for determining consensus recommendations. Does the absence of evidence lead to the conclusion of evidence of absence? In this case, panel members came to different conclusions. In older populations, the majority of the panel interpreted the lack of definitive benefit from RCTs as grounds to raise the SBP treatment goal recommendation to 150 mm Hg; however, for patients younger than 60 years, the paucity of any trial evidence provided no reason for the panel to change the existing treatment goal of SBP at 140 mm Hg.

How the panel's conclusions are viewed may partially be influenced by the recommendations' ultimate purpose. The original term for practice "guidelines" was borrowed from a mountain-climbing technique in which experienced guides marked the best and safest paths for hikers to take by placing ropes along the way.<sup>7</sup> In medicine, clinicians initially formed guidelines to suggest a safe direction when managing difficult clinical situations. If this original purpose had remained intact, then the debate around a specific SBP threshold would most likely not be so intense. Clinicians would still be free to consider more aggressive treatment goals for a healthy asymp-

tomatic 60-year-old patient, while electing a more conservative treatment goal for a 75-year-old patient with a history of falls. Yet over time, as guidelines have become more formalized, deviations from guideline recommendations have become less tolerated. Furthermore, guideline recommendations have now been distilled into "performance measures," which use rigid criteria to assess physicians' quality of care. Rather than merely suggesting a course of action, performance measures define what a clinician should and must do to avoid a quality concern. As a result, performance metrics are increasingly linked to public reporting and pay-for-performance programs, providing powerful incentives for measuring performance.<sup>8</sup>

Currently, performance measures for BP control modeled after JNC 7 indicate that a clinician is expected to lower a hypertensive patient's BP to less than 140/90 mm Hg (or at least treat with 2-3 antihypertensive medications).<sup>9</sup> Nonetheless, a potential unintended consequence of this targeted performance measure from JNC 7 is that it could encourage clinicians to become overly aggressive in their BP management of older patients, simply to meet a specific metric. Whether the panel members of the updated hypertension recommendations considered these derivative guideline implications when they created more conservative higher treatment thresholds in older patients is not stated.

While it is important to consider how hypertension recommendations may affect individuals, it is also important to consider how these might affect community care and general public health. Specifically, there is always some slippage between targets set for clinicians and that actually achieved in routine practice. For example, despite current JNC 7 goals and national performance metrics, only about half of patients with hypertension in the United States actually have an SBP of 140 mm Hg or less.<sup>10</sup> If this relationship holds, then raising the national SBP treatment targets in older individuals to 150 mm Hg might result in up to half having levels above this mark. Whether this change will have adverse consequences for population health is unclear, but it should be recalled that in the SHEP study, a 5-year lowering of average SBP from 155 mm Hg to 143 mm Hg resulted in a 32% reduction in cardiovascular events.<sup>11</sup>

In addition, distilling the complexity of data from RCTs from selected trial participants into simple recommendations when the evidence is nuanced and rapidly evolving is a challenge. Do important public health messages need to be simple to be effective? It has taken a decade to teach clinicians and patients that high BP is defined as levels higher than 140/90 mm Hg, so how long will it take to teach them that these targets need to be altered to 150/90 mm Hg for patients who reach 60 years of age? However, the current recommendations do simplify the treatment targets, removing the lower thresholds for those with diabetes and kidney disease.

It also must be recognized that the philosophy used to create both past and present hypertension recommendations differs from that used in the recent revisions of the cholesterol guidelines.<sup>12</sup> The authors of the new cholesterol treatment guidelines emphasized assessing an individual's aggregate car-

diovascular risk and then treating those at greatest overall risk with more aggressive therapy. Because older individuals have higher cardiovascular risk profiles, they more frequently receive a recommendation for intervention. Rather than considering a patient's total risk profile, the current panel's hypertension recommendations focus on a single risk factor (ie, BP) and recommend less (as opposed to more) aggressive treatment of BP in older individuals. These differences may be rationally based on the adverse effect profiles of the 2 interventions, yet such divergent philosophies may cause confusion among clinicians and patients alike.

While it is likely that there will be considerable controversy in hypertension treatment for the foreseeable future, several critical next steps are needed. First, larger RCTs need to compare different BP thresholds in diverse patient populations. Ideally, these investigations would be conducted using the evolving strategies of practical clinical trial designs to improve their efficiency and real-world generalizability.<sup>13</sup> Second, there is an important need to create a national consensus group to draft an updated comprehensive practice guideline

that would harmonize the hypertension guideline with other cardiovascular risk guidelines and recommendations, thereby resulting in a more coherent overall cardiovascular prevention strategy. This group should include representatives from multiple specialties and primary care disciplines, should follow the Institute of Medicine recommendations for guideline development, and should cover the full range of cardiovascular care topics, to develop an integrated approach for prevention, detection, and evaluation, along with treatment goals. Individual recommendations from discrete guidelines—such as for hypertension, cholesterol, and obesity—do not reflect the integrated care needed for many patients seen in practice. Third, the process of translating practice guidelines into performance measures needs to be more deliberate. For example, performance measures derived from guidelines need to be cognizant of the potential unintended consequences if treatment goals are set too strict or adherence to these is too rigid. Finally, once the right targets for BP thresholds are determined, patients and physicians need to work together to consistently achieve these new goals.

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