Table 1

Hypertension Prevalence and Control Estimates Among U.S. Adults Aged 18 Years and Older

Subgroup	Total Population	Hypertension			Uncontrolled†					
					Among all adults with hypertension			Among adults recommended medication and lifestyle modification		
	No., millions	%	(se)	No., millions	%	(se)	No., millions	%	(se)	No., millions
Total	249.2	48.1	(1.2)	119.9	77.5	(0.9)	92.9	71.6	(0.9)	67.9
Men	120.1	50.6	(1.8)	60.8	77.8	(1.3)	47.3	71.2	(1.6)	33.4
Women	129.0	45.7	(1.5)	58.9	77.2	(1.3)	45.5	72.0	(1.7)	34.5
Age Group, years										
18–44	115.1	26.4	(1.5)	30.4	93.4	(1.5)	28.3	85.8	(2.9)	12.2
45–64	83.0	58.9	(1.6)	48.9	74.4	(1.5)	36.4	68.7	(1.8)	27.5
≥65	51.1	77.1	(1.6)	39.4	69.7	(1.5)	27.5	69.7	(1.5)	27.5
Race/Hispanic Origin										
NH White	157.7	48.9	(1.9)	77.1	74.9	(1.4)	57.7	68.5	(1.6)	42.0
NH Black	29.4	57.8	(1.7)	17.0	83.2	(1.4)	14.2	79.9	(1.6)	11.4
NH Asian	14.7	45.2	(1.1)	6.6	81.6	(2.5)	5.4	76.2	(3.0)	3.9
Hispanic	40.4	38.6	(1.4)	15.6	82.8	(2.1)	12.9	77.0	(2.7)	9.0
Other	7.0	51.0	(3.7)	3.6	80.4	(3.3)	2.9	73.1	(4.5)	1.9

Data Source: National Center for Health Statistics, Centers for Disease Control and Prevention. National Health and Nutrition Examination Survey (NHANES), 2017–2020.
Definitions: ACC/AHA criteria adapted from Ritchey MD, Gillespie C, Wozniak G, et al. Potential need for expanded pharmacologic treatment and lifestyle modification services under the 2017 ACC/AHA Hypertension Guideline. J Clin Hypertens. 2018;20(10):1377–1391.
Abbreviation: NH, non-Hispanic.
†Blood pressure ≥130/80 mm Hg; all adults recommended lifestyle modifications only are considered to have uncontrolled hypertension as their blood pressure is above the threshold.

Under Pressure

A qualitative look at resistant hypertension

By Alicia Rooney, MPH, MSW; Jeff Mohl, PhD; and Elizabeth L. Ciemins, PhD, MPH, MA

Background

Hypertension, or high blood pressure (BP), is the leading risk factor for heart disease and stroke, two of the top five leading causes of death in the United States.[1,2] Despite the decrease in prevalence of heart disease in recent years, it has maintained its spot as the No. 1 leading cause of death.[1–3]

Disease burden is even greater for patients with resistant hypertension, defined as those whose BP remains uncontrolled despite three or more antihypertensive medications or

patients with hypertension taking four or more antihypertensive medications (whether BP is controlled or uncontrolled).[4,5] Patients with resistant hypertension are 47% more likely to experience heart disease, stroke, chronic kidney disease, and death when compared to patients with hypertension.[5]

Achieving appropriate BP control is the best way to continue reducing the burden of heart disease in the U.S.[1,3] Provider perspectives and practices related to the management of hypertension and BP control can provide insight into contributors to uncontrolled BP. That insight can be used to standardize practices and reduce disease burden in patients with hypertension and resistant hypertension.

Methods

To better understand provider experiences with managing hypertension and barriers to BP control, semi-structured interviews were conducted in March and April 2023 with physicians who regularly treat patients with resistant hypertension.

An interview guide was developed based on findings from an associated database study on BP control for patients taking three or more antihypertensive drugs in 2019, with follow-up through March 2022. Select findings were reviewed with respondents during each interview. Background information on respondents was collected at the start of each interview.

Other topics covered by the interview guide included knowledge and awareness, identification and diagnosis, treatment protocols and guidelines, medication adherence, treatment escalation, and disparities as they relate to hypertension and resistant hypertension.

Interviews lasted approximately 90 minutes using Zoom videoconferencing and transcription, and two to three notetakers were present in each interview. Content analysis of Zoom transcripts and recordings along with notes taken were used for theme generation.

Results

Three interviews were conducted with cardiologists or primary care physicians, each practicing in unique regions of the U.S.

Interviews covered three main domains, with emergent themes under each: BP targets, treatment approach and escalation, and medication adherence. Physicians held differing perspectives on each domain.

1 Blood Pressure Targets

Organization-wide BP targets and BP targets among physicians within the same specialty were aligned, while the importance physicians placed on meeting targets varied. Two of the three physicians knew their organization's BP target to be 140/90 mmHg, and the third physician was unaware of an organization-wide BP target. Cardiologists reported targeting 130/80 mmHg, but among them, approaches differed. One cardiologist described the belief that all patients should be controlled to the same BP target:

"Targets are the same for everybody." — *Cardiologist*

Another cardiologist used a more individualized approach, taking into consideration age, frailty, and comorbid conditions when deciding whether to aggressively target 130/80 for each specific patient.

Primary care physicians were reported to target 140/90, aligning with organization-wide targets discussed. However, one primary care physician described using a patient-specific approach and was more concerned about how the patient feels than reaching a target BP:

"We get to where we're at the right zone, which does not mean the blood pressure's controlled; it just means the patient feels good... because when you push for this number, especially in older adults, they end up with syncopal episodes, falling, orthostatic hypotension, feeling weak, dizzy." — *Primary Care Physician*

2 Treatment Approach and Escalation

Physician approaches for treating hypertension varied, as expected based on differences in treatment goals described previously as well as different roles in the organization. Physicians first discussed their unique perspectives on which drug(s) to prescribe. One approach involved reliance on clinical guidelines and clinical trials to decide on drug class, including referring to the literature as needed. A second, very different approach indicated that participants in clinical trials are not representative of all patient populations and that generics taken once a day with minimal side effects work best

Achieving appropriate BP control is the best way to continue reducing the burden of heart disease in the U.S.

for very ill patients and those who are greatly impacted by social determinants of health:

"Super sexy meds… don't work in older adults or those who are sick or frail."
— *Primary Care Physician*

A third, more individualized approach involved variation in drug classes prescribed based on patient comorbidities and medication tolerance. For example, in this approach, patients with diabetes or chronic kidney disease typically start on an angiotensin-converting enzyme (ACE) or an angiotensin receptor blocker (ARB).

As part of the discussion on treatment approaches, physicians were also asked to discuss the process they use to escalate treatment, whether by adding a new drug or increasing an existing drug dose. Once again, three different approaches were described. One approach involved maximizing each drug's dose before adding another drug and, for patients with resistant hypertension, trying different drug classes before adding a fourth-line medication. Another physician disagreed:

"I get more bang for the buck by adding another class… so I think I probably wind up adding a fourth before going to necessarily a max of a third." — *Cardiologist*

A third approach emphasized escalating treatment only until the patient feels good and simplifying medication regimens to ensure they are taken as prescribed, reiterating a focus on patient acceptability rather than achieving a specific BP target.

3 Medication Adherence

The physicians agreed, with varying degrees of emphasis, that evaluating and improving medication adherence is an important component in controlling BP among patients with hypertension. One physician frequently discussed medication nonadherence as the most prominent challenge to BP control during their interview:

"What changes the prognosis of this patient is: are [they] taking the medications?"
— *Primary Care Physician*

They stated that the majority of their patients on three or more medications with uncontrolled BP experience social barriers to taking medication as prescribed—such as low health literacy, challenges with transportation to the pharmacy, or inability to afford prescriptions—and only a small proportion of patients have resistant hypertension.

In general, physician focus on medication adherence varied depending on average levels of health literacy among their specific patient population. A physician treating patients with higher health literacy discussed asking patients about current medications, while a physician treating patients on the other end of the spectrum described a more robust and hands-on approach to evaluating and improving medication adherence: building trust with patients, communicating instructions via multiple modes, and utilizing pill packs. Similarly, a third physician described partnering with each patient and refraining from judging them along with clear communication as the basis of their approach to evaluating and improving medication adherence:

"Trust, I think, is the most important thing."
— *Cardiologist*

Conclusion

Interviews with three physicians heavily involved in the management of BP for patients with hypertension outlined three very different perspectives on this challenging issue. Opinions ranged from being highly focused on achieving BP targets in line with recent guideline recommendations[6] to emphasizing a more holistic approach that centered on the overall patient experience rather than a specific BP target. These different opinions impacted approaches to treatment with medication, either emphasizing new medications and higher dosages (when BP targets were the focus) or patient convenience and acceptability (when focused on patient experience). Ultimately, all interviewed physicians agreed on the importance of communication and patient education in treating high BP, particularly in the context of improving medication adherence, with two also highlighting the importance of trust and patient/provider relationship.

The variation in how BP targets are chosen and achieved, the choice of medication and escalation, and the different approaches to improving patient medication adherence highlight the complex and multifaceted nature of managing hypertension as well as the unique populations being managed.

Ultimately, organizations need to support their healthcare providers in adopting tailored approaches to hypertension management that account for patient-specific circumstances while also encouraging adherence to best practice guidelines that take advantage of the evolving nature of evidence-based practice. Although complex, this balance is crucial for achieving better BP control across diverse patient populations and reducing the overall burden of hypertension and its consequences on population health. GPJ

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