



American
Heart
Association.

ICD-10-CM Coordination and Maintenance Committee



9 March 2022

Resistant Hypertension

Robert M. Carey, MD, MACP, FRCP, FRCPI, FAHA
Dean, Emeritus, and Professor of Medicine
University of Virginia School of Medicine

Lillie Noe
Manager, Professional Membership
American Heart Association

RESISTANT HYPERTENSION

Definitions

- Uncontrolled Resistant Hypertension

BP that remains above the therapeutic goal, currently (2017 ACC/AHA):

<130/80 for population overall

in spite of concurrent use of ≥ 3 antihypertensive agents of different classes. All agents should be administered at maximum or maximally tolerated doses and at the appropriate dosing interval.

- Controlled Resistant Hypertension

BP that is controlled at or below target, but requiring ≥ 4 antihypertensive agents of different classes.

DIAGNOSIS AND EVALUATION OF RESISTANT HYPERTENSION

CONFIRM TREATMENT RESISTANCE

- Clinic BP \geq 130/80 mmHg
- Patient taking \geq 3 antihypertensive agents
 - Most commonly including:
 - long-acting CCB
 - renin-angiotensin system blocker (ACEI or ARB)
 - diuretic

All at maximal or maximally tolerated doses and proper dosing intervals

DIAGNOSIS AND EVALUATION OF RESISTANT HYPERTENSION, cont.

CONFIRM TREATMENT RESISTANCE



EXCLUDE PSEUDORESISTANCE

SEPARATE TRUE FROM APPARENT (PSEUDO) RESISTANT HYPERTENSION

True resistant hypertension requires:

- Accurate BP measurement according to current guidelines
- Exclusion of the “white coat effect” using ABPM (or if unavailable HBPM)
- Exclusion of suboptimal medication adherence or non-adherence

All are now included in the definition of resistant hypertension.

If any of the 3 causes of pseudoresistant hypertension cannot be excluded, the hypertension is termed “**apparent treatment resistant hypertension**”.

ACCURATE BP MEASUREMENT ACCORDING TO GUIDELINES

- **Inaccurate BP measurement** may result from improper preparation of the patient, non-ideal environmental conditions, incorrect cuff size and improper measurement technique.
- Diagnostic BP recordings should include an average of ≥ 2 BP readings obtained on ≥ 2 separate occasions.
- Before diagnosis of resistant hypertension, accurate BP measurement is imperative.

EXCLUSION OF THE “WHITE COAT EFFECT”

- The white coat effect is defined as having treated office BP above goal but out-of-office BP by ambulatory BP monitoring (ABPM) or home BP monitoring (HBPM) at or below goal in a patient taking at least 3 antihypertensive agents.
- The white coat effect carries the same cardiovascular disease risk as controlled hypertension, so it is crucial to exclude this entity before escalating treatment.
- Thus, out-of-office BP is required to make the diagnosis of resistant hypertension.

ANTIHYPERTENSIVE MEDICATION NONADHERENCE

- One quarter of patients newly initiated on antihypertensive therapy fail to fill their initial prescription.
- During the first year of treatment, the average patient has possession of antihypertensive medication only 50% of the time.
- Only one in 5 patients has sufficiently high adherence to achieve the benefits observed in clinical trials.
- Overall, the prevalence of suboptimal adherence is 25-50% in patients with apparent treatment resistant hypertension.

RESISTANT HYPERTENSION

Significance

More severe hypertension and more frequent cardiovascular complications.

Kaiser Permanente Study:

5-y retrospective cohort study (470,386 hypertensive patients)
60,327 with RH compared with 410,059 with non-RH:

<u>Outcome</u>	<u>Adjusted HR (95% CI)</u>
Heart Failure	1.46 (1.40-1.52)
ESRD	1.32 (1.27-1.37)
Ischemic cardiac events	1.24 (1.20-1.28)
Stroke	1.14 (1.10-1.19)
Mortality	1.06 (1.03-1.08)

The risks for only ESRD and stroke were greater (25% & 23%, respectively) for uncontrolled than controlled RH.

DIAGNOSIS AND EVALUATION OF RESISTANT HYPERTENSION, (cont)

CONFIRM TREATMENT RESISTANCE



EXCLUDE PSEUDORESISTANCE



IDENTIFY AND REVERSE CONTRIBUTING LIFESTYLE FACTORS

- Obesity
- High dietary sodium intake
- Alcohol
- Physical inactivity
- Poor dietary pattern

DIAGNOSIS AND EVALUATION OF RESISTANT HYPERTENSION

Confirm treatment

CONFIRM TREATMENT RESISTANCE



EXCLUDE PSEUDORESISTANCE



IDENTIFY AND REVERSE CONTRIBUTING LIFESTYLE FACTORS



DISCONTINUE OR MINIMIZE INTERFERING SUBSTANCES

NSAIDS

Oral contraceptives and HRT

Sympathomimetic amines

Immunosuppressive agents

Tyrosine kinase inhibitors

Cocaine & amphetamines

Antidepressants

Recombinant EPO

EVALUATION AND TREATMENT OF RESISTANT HYPERTENSION

CONFIRM TREATMENT RESISTANCE



EXCLUDE PSEUDORESISTANCE



IDENTIFY AND REVERSE CONTRIBUTING LIFESTYLE FACTORS



DISCONTINUE OR MINIMIZE INTERFERING SUBSTANCES



SCREEN FOR SECONDARY CAUSES OF HYPERTENSION

- Primary aldosteronism (20%)
- Renal parenchymal disease
- Renal artery stenosis
- Obstructive sleep apnea
- Pheochromocytoma/paraganglioma
- Cushing's syndrome

MANAGEMENT OF RESISTANT HYPERTENSION

Substitute a long acting thiazide-like diuretic
Chlorthalidone or indapamide



Add a mineralocorticoid receptor antagonist
Spironolactone or eplerenone



Note: no evidence beyond this point.

Add a beta-blocker or combined alpha/beta-blocker
Metoprolol, labetalol, carvedilol or bisoprolol



Add hydralazine
(Combined with beta-blocker and diuretic)



Add minoxidil
(Combined with beta-blocker and loop diuretic)

**Refer to a
hypertension
specialist**

REQUEST

The American Heart Association Hypertension Council respectfully requests consideration of a new ICD-10-CM code for resistant hypertension (separate from existing codes for hypertension) based upon:

- Complexity of accurately diagnosing and effectively treating resistant hypertension.
- Requirements for expertise in conducting out-of-office BP monitoring (ABPM, HBPM)
- Documentation of target organ damage
- Identification of secondary causes of and contributing factors to treatment resistance
- Institution of rigorous lifestyle modification and intricate pharmacologic therapy

ANTICIPATED OUTCOME

A specific ICD-10-CM code for resistant hypertension will enable:

- Accurate identification of patients with resistant hypertension within the general hypertensive population;
- The medical community to overcome existing suboptimal antihypertensive therapy;
- Proper evaluation of the contributing factors and causes of resistant hypertension, including lifestyle factors and secondary causes that often are reversible with specific treatment;
- Optimal BP control, thus improving cardiovascular and renal morbidity and mortality;
- Alleviation of certain existing racial disparities in the management of hypertension.

***THANK YOU FOR YOUR
KIND ATTENTION !***