



Complete Summary

GUIDELINE TITLE

American Association of Clinical Endocrinologists medical guidelines for clinical practice for the diagnosis and treatment of hypertension.

BIBLIOGRAPHIC SOURCE(S)

AACE Hypertension Task Force. American Association of Clinical Endocrinologists medical guidelines for clinical practice for the diagnosis and treatment of hypertension. Endocr Pract 2006 Mar-Apr;12(2):193-222. [187 references]
[PubMed](#)

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
QUALIFYING STATEMENTS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY
DISCLAIMER

SCOPE

DISEASE/CONDITION(S)

Hypertension secondary to or coincident with endocrinopathies

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Treatment

CLINICAL SPECIALTY

Cardiology
Endocrinology
Family Practice
Internal Medicine
Nephrology
Nutrition
Obstetrics and Gynecology
Pediatrics
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Dietitians
Health Care Providers
Managed Care Organizations
Nurses
Physician Assistants
Physicians
Students

GUIDELINE OBJECTIVE(S)

- To indicate when to suspect the presence of and pursue further testing for secondary hypertension
- To provide appropriate examples of the most common causes of endocrine-associated hypertension that physicians may encounter
- To elucidate the cause of each endocrine disorder underlying hypertension
- To describe the tests used to confirm each diagnosis
- To identify the appropriate management options for each condition, based on the available evidence and known pathophysiologic changes
- To discuss outcomes and potential side effects associated with each management option

TARGET POPULATION

Patients with hypertension secondary to or coincident with endocrinopathies

INTERVENTIONS AND PRACTICES CONSIDERED

1. Lifestyle modifications including weight loss, sodium and alcohol restriction, adequate potassium intake, exercise
2. Disease/condition specific interventions for:
 - Type 2 diabetes
 - Use of blood pressure goals
 - Angiotensin-converting enzyme inhibitor (ACEI) or angiotensin receptor blocker (ARB) as first- or second-line therapy
 - Thiazide diuretic as first- or second-line therapy
 - Beta-adrenergic blocker (BB), preferably one that blocks both alpha and beta receptors, as second- or third-line agent

- Calcium channel blockers (CCB) as second- or third-, or fourth-line agent
- Pheochromocytoma
 - Alpha-adrenergic blocker as first-line agent in conjunction with BB or CCB or both as needed, followed by surgical resection, if feasible
- Hyperaldosteronism
 - Surgical resection (e.g., adrenalectomy)
 - Aldosterone antagonists, ACEI, or ARB
 - Low-dose glucocorticoid for glucocorticoid-remediate aldosteronism
- Cushing's syndrome
 - Surgical or ablative therapy
 - Medical inhibition (ketoconazole) in intractable cases
- Pregnancy
 - All major antihypertensive agents except ACEI and ARB (preferably methyldopa or nifedipine)
 - Magnesium sulfate for preeclampsia at high risk for seizures

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
 Hand-searches of Published Literature (Secondary Sources)
 Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

References were obtained through computerized searching of the literature, scanning of incoming journal issues in the medical library, and review of references in pertinent review articles, major textbooks, and syllabi from national meetings.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

American Association of Clinical Endocrinologists Criteria for Determining Level of Evidence

Levels of Evidence

1. Well-controlled, generalizable, randomized trial
 - Adequately powered
 - Well-controlled multicenter trial
 - Large meta-analysis with quality ratings
 - All-or-none evidence
2. Randomized controlled trial--limited body of data
 - Well-conducted prospective cohort study
 - Well-conducted meta-analysis of cohort studies
3. Methodologically flawed randomized clinical trials
 - Observational studies
 - Case series or case reports
 - Conflicting evidence with weight of evidence supporting the recommendation
4. Expert consensus
 - Expert opinion based on experience
 - "Theory-driven conclusions"
 - "Unproven claims"

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

The American Association of Clinical Endocrinologists (AACE) Hypertension Task Force members collected data, reviewed and graded clinical evidence in accordance with established criteria, and developed a section of the report consistent with their clinical focus or area of specialization.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The American Association of Clinical Endocrinologists (AACE) Hypertension Task Force consists of experts in the fields of both endocrinology and hemodynamics.

All task force participants are active members of the AACE or the American Society of Hypertension (or both). Several contributors have authored publications on endocrine disorders, hypertension, or their association. These guidelines were developed in accordance with the AACE Protocol for Standardized Production of Clinical Practice Guidelines.

Final recommendations represent a consensus among the task force members. Because many of the endocrine syndromes described herein are uncommon and outcome data are scarce, comments and recommendations on the management of these conditions are based on a combination of available evidence and expert judgment of task force members.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

American Association of Clinical Endocrinologists Criteria for Determining Recommendation Grade

- A. Homogeneous evidence from multiple well-designed randomized controlled trials with sufficient statistical power

Homogeneous evidence from multiple well-designed cohort controlled trials with sufficient statistical power

≥ 1 conclusive level 1 publications demonstrating benefit >> outweighs risk

- B. Evidence from at least one large well-designed clinical trial, cohort or case-controlled analytic study, or meta-analysis

No conclusive level 1 publication; ≥ 1 conclusive level 2 publications demonstrating benefit >> outweighs risk

- C. Evidence based on clinical experience, descriptive studies, or expert consensus opinion

No conclusive level 1 or 2 publication; ≥ 1 conclusive level 3 publications demonstrating benefit >> outweighs risk

No conclusive risk at all and no conclusive benefit demonstrated by evidence

- D. Not rated

No conclusive level 1, 2, or 3 publication demonstrating benefit >> outweighs risk

Conclusive level 1, 2, or 3 publication demonstrating risk >> outweighs benefit

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

These recommendations have been approved by reviewers, the American Association of Clinical Endocrinologists (AACE) Publications Committee, and the AACE Board of Directors.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The levels of evidence (1 to 4) and the recommendation grades (A to D) are defined at the end of the "Major Recommendations" field.

Summary of Evidence-Based Recommendations for Management of Hypertension*

Indication	Recommendation	Highest Level of Evidence	Grade
Lifestyle modification	Weight loss (in overweight patients)	1	A
	Sodium restriction (2.3-3 g/day)	1	A
	Potassium intake \geq 3.5 g/day	1	A
	Alcohol restriction \leq 1 oz/day	2-3	B
	Exercise \geq 30 min/day	3-4	C
Type 2 diabetes	Goal BP \leq 130/80 mm Hg	2	A
	Goal BP \leq 120/75 mm Hg when severe proteinuria exists	1	A
	ACEI or ARB as first- or second-line agent	1	A
	Thiazide diuretic as first- or second-line agent (in low dosage with adequate potassium replacement or sparing)	1	A
	BB (preferably drugs that block both alpha and beta receptors) as second- or third-line agent	1	A

Indication	Recommendation	Highest Level of Evidence	Grade
	CCB (preferably nondihydropyridine) as second-, third-, or fourth-line agent	1	A
Pheochromocytoma	Alpha-adrenergic blocker as first-line agent, in conjunction with BB or CCB (or both) as needed	3	C
Hyperaldosteronism	Surgical resection for unilateral adenoma	2	B
	Aldosterone antagonists, ACEI, or ARB for hyperplasia	2	B
	Low-dose glucocorticoid for GRA	3	C
Cushing's syndrome	Surgical or ablative therapy for adenoma	1	A
	Medical inhibition of steroid synthesis (especially ketoconazole) in intractable cases	2	B
Pregnancy	All major antihypertensive agents except ACEI/ARB (preferably methyldopa or nifedipine)	1-2	A
	Magnesium for preeclampsia at high risk for seizures	1-2	A

*Abbreviations

ACEI = angiotensin-converting enzyme inhibitor

ARB = angiotensin receptor blocker

BB = beta-adrenergic blocking agent

BP = blood pressure

CCB = calcium channel blocker

GRA = glucocorticoid-remediable aldosteronism

Lifestyle Modification

A significant observation is that 30% to 65% of patients with hypertension are obese, a problem frequently compounded by high sodium intake, sedentary lifestyle, and excessive use of alcohol. Therefore, lifestyle modifications directed at correcting these contributing factors may benefit the patient regardless of the primary cause of the hypertension and should have an important, first-line role in any therapy. A moderate weight loss of 5 to 10 kg can have a significant beneficial effect on hypertension in obese patients (*grade A*, on the basis of multiple well-controlled trials).

The American Association of Clinical Endocrinologists (AACE) recommends restricting daily sodium intake to less than 3 g in patients with uncomplicated hypertension or to as low as 2.3 g in patients with refractory hypertension or

multiple risk factors, particularly diabetes mellitus (*grade A*). Although not all cases of hypertension are related to sodium intake, sodium restriction is an important adjunct to other lifestyle modifications and pharmacologic therapy. Insufficient potassium intake may also be an etiologic factor in hypertension. The AACE recommends a daily potassium intake of at least 3.5 g (in the absence of renal insufficiency), preferably from fresh fruits and vegetables (*grade A*).

Daily consumption of more than 1 oz of alcohol is associated with elevated levels of BP; even this small quantity may also impair the response to pharmacologic therapy for hypertension. Accordingly, healthy adults should limit alcohol consumption to 2 or fewer average-sized alcoholic drinks per day (*grade B*, because of the absence of any well-controlled randomized trials).

A favorable inverse relationship has been noted between BP and regular physical activity, independent of body weight. Thus, moderately intense exercise for at least 30 minutes daily is recommended for all adults (*grade C*, primarily based on observational studies and expert consensus opinion).

Diabetes and Hypertension

Type 2 diabetes mellitus and hypertension are common across all populations and frequently coexist. This relationship is particularly true in African American subjects, among whom up to 14% of adults may have both disorders. Many of the estimated 49 to 69 million adults in the United States with insulin resistance also have hypertension, and a quarter of the patients with type 1 diabetes mellitus have hypertension. Obviously, common pathophysiologic processes are at work, which will influence the effectiveness of all treatments for either disorder. Because of the strong correlation of both diabetes and hypertension with risk of cardiovascular disease (CVD), optimal therapy should address both conditions, while including the common benefits of lifestyle modification.

Because angiotensin-converting enzyme inhibitors (ACEIs) and angiotensin receptor blockers (ARBs) are associated with favorable effects on renal function and may improve insulin sensitivity, they are ideal first choices in the treatment of patients with both diabetes and hypertension (*grade A*). Diuretics have also been shown to be effective in the treatment of hypertension, both alone and in combination therapy, and likely are even more effective in patients with excess sodium intake or impaired sodium excretion. Thiazide diuretics, however, can worsen blood glucose control in patients with diabetes and can increase the likelihood of development of diabetes mellitus in insulin-resistant subjects. Thus, diuretics may have an effective role in the treatment of hypertension in these patients, but they should be used in the lowest effective dosage in conjunction with adequate potassium replacement or the addition of a potassium-sparing agent (*grade A*).

Beta-adrenergic blocking agents (BBs) may likewise precipitate or exacerbate type 2 diabetes mellitus. This feature, together with a variety of adverse side effects, seems to make BBs less appealing as first-line agents for treatment of hypertension in patients with either type 2 or type 1 diabetes mellitus (*grade A*). BBs, however, have proved effective in the management of the ischemic and congestive cardiomyopathies that are more common in patients with diabetes than in those without diabetes. Because the major adverse effects of BBs may be

mediated by peripheral vasoconstriction and increasing insulin resistance, the use of the new third-generation BBs (such as nebivolol) or drugs that block both alpha and beta receptors (such as carvedilol) may prove to be particularly beneficial (*grade A*). These agents cause vasodilatation and an increase in insulin sensitivity.

The use of calcium channel blockers (CCBs) has been associated with both benefits and adverse outcomes in a variety of study populations with diabetes. The nondihydropyridine CCBs (that is, diltiazem and verapamil) may reduce microalbuminuria to an extent comparable to that with the ACEIs, whereas dihydropyridine CCBs may increase it. Increased albuminuria is associated with increased cardiovascular disease (CVD) and chronic kidney disease risk. Although not considered optimal agents for first-line therapy or monotherapy in patients with diabetes, CCBs have proved safe and effective in combination regimens with ACEIs, diuretics, and BBs (*grade A*).

In general, combination therapy is needed to achieve the stricter BP goals set for most patients with diabetes mellitus. The seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC) recommended achieving systolic BP below 130 mm Hg and diastolic BP below 80 mm Hg in these patients. Although this goal is based largely on level 2 and 3 evidence, the AACE wishes to promote an aggressive approach to the management of hypertension in patients with diabetes and classifies this recommendation as *grade A*. Systolic and diastolic BP goals at or below 120/75 mm Hg may be even more effective in slowing the progression of renal disease and other cardiovascular and cerebrovascular complications, particularly in the presence of substantial proteinuria (>1 g daily) (*grade A*).

In light of the plethora of data showing that patients with diabetes have, on average, a 2-fold greater risk of renal disease and a 3-fold greater risk of CVD in comparison with subjects without diabetes, AACE recommends an early aggressive approach in the management of hypertension as part of overall risk factor reduction. In addition to lifestyle modifications, the use of an ACEI or ARB, in conjunction with a low-dose diuretic, a CCB, a third-generation BB, or some combination of these agents, currently seems to be the preferred initial therapeutic regimen for patients with diabetes (*grade A*).

Endocrine Hypertension

The potential to "cure" someone's hypertension or to avoid a serious complication is of paramount importance but occasionally must be weighed against the costs, particularly the health risks, of attempting to do so. At times, the clinical situation may suggest the likelihood of a secondary cause of hypertension. The index of suspicion for an underlying cause may be raised by the absence of usual accompanying factors (including a family history, gradual onset, obesity, or high salt intake) or by unexpected clinical or laboratory findings before or during treatment (including hypokalemia, azotemia, tachycardia, or refractoriness to treatment). Causes of endocrine hypertension include disorders of the adrenal, thyroid, parathyroid, or pituitary glands or a renin-secreting tumor. The most common of these are of adrenal origin--namely, mineralocorticoid, catecholamine, or glucocorticoid excess. Renal artery stenosis is the main treatable cause of secondary hypertension not of a primary endocrine origin.

Pheochromocytoma is one of the less common but more dramatic and most pursued causes of endocrine hypertension. Most pheochromocytomas are benign, but a substantial percentage may be bilateral or extra-adrenal lesions (paragangliomas). The hypertension may be episodic or sustained. Patients with pheochromocytoma may have a family history of pheochromocytoma or multiple endocrine neoplasia (MEN) syndrome. More commonly, the index of suspicion is raised by episodes of pallor and evidence of orthostatic hypotension accompanying the typical symptoms, such as palpitations, diaphoresis, and headache. The diagnosis requires demonstration of elevated levels of catecholamines or metabolites in the plasma or urine. Sensitivity and specificity considerations should guide the choice of investigatory procedures, including subsequent imaging techniques. Definitive treatment by surgical excision of the tumor cures the hypertension in about 75% of cases. Underlying essential hypertension, progressive renal disease, or an approximately 10% recurrence rate, usually with malignant histologic findings, may prevent complete cure. Preoperative control as well as management of any residual disease (particularly with malignant involvement) is best accomplished with alpha-adrenergic blocking agents and addition, as needed, of BBs or CCBs (or both) (*grade C*).

Primary hyperaldosteronism may account for up to 15% of patients with hypertension, particularly in middle age. Although hypokalemia and metabolic alkalosis are classic findings, many patients with primary hyperaldosteronism may not display these findings, particularly when adrenal hyperplasia is the cause. The use of the random serum aldosterone/plasma renin activity ratio (ARR) with a sufficiently high cutoff value has facilitated diagnosis at an acceptable cost and low risk. The diagnosis of primary hyperaldosteronism ultimately depends on demonstration of the following findings: (1) hypertension, (2) an elevated ARR, and (3) an elevated serum aldosterone concentration or urinary aldosterone excretion (or both).

Identifying the specific cause of primary hyperaldosteronism can be difficult but should be pursued. Distinguishing between aldosterone-producing adenoma (unilateral or bilateral) and bilateral adrenal hyperplasia may be particularly difficult, necessitating one or more imaging techniques or selective adrenal vein sampling. Although a laparoscopic surgical procedure is increasingly available and usually the treatment of choice for a unilateral adenoma, medical therapy is preferred for bilateral adrenal hyperplasia (*grade B*). In patients with glucocorticoid-remediable aldosteronism (GRA), low doses of a glucocorticoid may provide effective treatment after exclusion of Cushing's disease or ectopic production of corticotropin (adrenocorticotrophic hormone or ACTH) (*grade C*).

Cushing's syndrome is perhaps most frequently suspected as a cause of secondary hypertension and, at the same time, is one of the most elusive diagnoses to make. Many pseudo-Cushing's states have been identified, and because definitive treatment is almost always surgical, considerable care must be exercised to arrive at an accurate diagnosis. Unfortunately, in many cases, this diagnostic difficulty may result in substantial expense, including referral to a tertiary or even quaternary center at times, particularly if corticotropin-releasing hormone (CRH) stimulation and inferior petrosal sinus sampling are necessary.

Identification of Cushing's syndrome, at least in the earlier stages, necessitates an increased index of suspicion among the myriad of patients with similar phenotypic

features, including centripetal obesity, hirsutism, and striae. New-onset glucose intolerance and hypertension may be the earliest features of the syndrome. Difficult-to-control hypertension, hypokalemia, and perhaps hyperpigmentation may be the only presenting manifestations when ectopic ACTH production is the initiating abnormality.

The cause of hypertension in most patients with Cushing's syndrome is unclear but likely multifactorial, including increased catecholamine sensitivity and some mineralocorticoid effect of cortisol. Accordingly, no one class or combination of antihypertensive agents tends to be routinely effective at controlling BP, and treatment should include elimination of the pathologic hormone production, usually by surgical intervention (*grade A*). In otherwise inoperable or intractable cases, ketoconazole and mitotane have been used with some success (*grade B*). Even after effective management of excess cortisolemia, however, up to 33% of patients with the endogenous syndrome have persistent systolic hypertension and 75% have persistent diastolic hypertension. As in the other foregoing causes of secondary hypertension discussed, residual or recurrent hypertension should be appreciably easier to manage after effective treatment of the endocrine pathologic condition.

Pregnancy-associated hypertension involves at least 3 different categories of patients, as discussed subsequently in the original guideline document. Even when the hormonal milieu of pregnancy is primarily etiologic, termination of the pregnancy is usually not a preferred option for treatment. Although the need to treat mild hypertension (<140/90 mm Hg) during pregnancy remains a matter of debate, the immediate treatment of severe hypertension (>170/110 mm Hg) clearly improves both maternal and fetal outcomes, and most authorities agree that treating moderate hypertension is also beneficial, at least to the mother. Methyldopa or CCBs, particularly nifedipine, are thought to be the most suitable antihypertensive agents for use during pregnancy, but BBs and other classes of antihypertensive drugs, except ACEIs and ARBs, can be used safely in accordance with the experience of the treating physician. Magnesium sulfate is superior to other agents in reducing recurrent eclamptic seizures and is recommended for preeclampsia at high risk for seizures. The levels of evidence for all the aforementioned recommendations warrant a *grade A* classification.

Definitions

Levels of Evidence

1. Well-controlled, generalizable, randomized trial

Adequately powered

Well-controlled multicenter trial

Large meta-analysis with quality ratings

All-or-none evidence

2. Randomized controlled trial--limited body of data

Well-conducted prospective cohort study

Well-conducted meta-analysis of cohort studies

3. Methodologically flawed randomized clinical trials

Observational studies

Case series or case reports

Conflicting evidence with weight of evidence supporting the recommendation

4. Expert consensus

Expert opinion based on experience

"Theory-driven conclusions"

"Unproven claims"

Recommendation Grades

A. Homogeneous evidence from multiple well-designed randomized controlled trials with sufficient statistical power

Homogeneous evidence from multiple well-designed cohort controlled trials with sufficient statistical power

≥ 1 conclusive level 1 publications demonstrating benefit >> outweighs risk

B. Evidence from at least one large well-designed clinical trial, cohort or case-controlled analytic study, or meta-analysis

No conclusive level 1 publication; ≥ 1 conclusive level 2 publications demonstrating benefit >> outweighs risk

C. Evidence based on clinical experience, descriptive studies, or expert consensus opinion

No conclusive level 1 or 2 publication; ≥ 1 conclusive level 3 publications demonstrating benefit >> outweighs risk

No conclusive risk at all and no conclusive benefit demonstrated by evidence

D. Not rated

No conclusive level 1, 2, or 3 publication demonstrating benefit >> outweighs risk

Conclusive level 1, 2, or 3 publication demonstrating risk >> outweighs benefit

CLINICAL ALGORITHM(S)

Algorithms are provided in the original guideline document for:

- Use of plasma renin activity (*PRA*) and plasma aldosterone concentration (*PAC*) and their ratio (*PAC/PRA*) for diagnosing hyperaldosteronism in patients with resistant hypertension, hypokalemia, or both
- Subtype evaluation after diagnosis of primary hyperaldosteronism has been established
- Assessment for Cushing's syndrome

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

These guidelines may be used to facilitate the achievement of accurate diagnosis and effective prevention or treatment of hypertension, and to indicate where more in-depth, focused evaluation is needed.

POTENTIAL HARMS

Adverse Effects of Medications

- Thiazide diuretics can worsen blood glucose control in patients with diabetes and can increase the likelihood of development of diabetes mellitus in insulin-resistant subjects. They should be used in the lowest effective dosage in conjunction with adequate potassium replacement or the addition of a potassium-sparing agent.
- Beta-adrenergic blocking agents (BBs) may likewise precipitate or exacerbate type 2 diabetes mellitus and are associated with a variety of other adverse effects (e.g., claudication, bronchospasm, erectile dysfunction).
- Dihydropyridine calcium channel blockers (CCBs) may increase microalbuminuria, and increased albuminuria is associated with increased cardiovascular disease and chronic kidney disease risk.
- Treatment with angiotensin-converting enzyme inhibitors (ACEIs) may be associated with claudication, bronchospasm and erectile dysfunction.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- American Association of Clinical Endocrinologists Medical Guidelines for Clinical Practice are systematically developed statements to assist health-care professionals in medical decision making for specific clinical conditions. Most of the content herein is based on literature reviews. In areas of uncertainty, professional judgment was applied.
- These guidelines are a working document that reflects the state of the field at the time of publication. Because rapid changes in this area are expected, periodic revisions are inevitable. We encourage medical professionals to use this information in conjunction with their best clinical judgment. The presented recommendations may not be appropriate in all situations. Any decision by practitioners to apply these guidelines must be made in light of local resources and individual patient circumstances.
- These guidelines are not a substitute for individual physician expertise and judgment. Rather, they are intended to serve as a decision-making aid and, ultimately, to help clarify some of the confusion surrounding hypertension diagnosis and treatment.
- Because many of the endocrine syndromes described in this guideline are uncommon and outcome data are scarce, comments and recommendations on the management of these conditions are based on a combination of available evidence and expert judgment of task force members.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Clinical Algorithm
Slide Presentation

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

AACE Hypertension Task Force. American Association of Clinical Endocrinologists medical guidelines for clinical practice for the diagnosis and treatment of hypertension. *Endocr Pract* 2006 Mar-Apr;12(2):193-222. [187 references]
[PubMed](#)

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2006 Mar-Apr

GUIDELINE DEVELOPER(S)

American Association of Clinical Endocrinologists - Medical Specialty Society

SOURCE(S) OF FUNDING

American Association of Clinical Endocrinologists (AACE)

GUIDELINE COMMITTEE

American Association of Clinical Endocrinologists (AACE) Hypertension Task Force

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Zachary T. Bloomgarden, MD, FACE, is or has been a speaker or consultant (or both) for Amylin Pharmaceuticals, CV Therapeutics, GlaxoSmithKline, Eli Lilly and Company, Novo Nordisk, Sanofi-Aventis, and Takeda Pharmaceuticals America. Other members of the AACE Hypertension Task Force reported no conflicts of interest.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [American Association of Clinical Endocrinologists \(AACE\) Web site](#).

Print copies: Available from the American Association of Clinical Endocrinologists (AACE), 245 Riverside Avenue, Suite 200, Jacksonville, FL 32202.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- American Association of Clinical Endocrinologists protocol for standardized production of clinical practice guidelines. *Endocrine Pract* 2004 Jul/Aug; 10(4):353-61.

Electronic copies: Available in Portable Document Format (PDF) from the [American Association of Clinical Endocrinologists \(AACE\) Web site](#).

Print copies: Available from the American Association of Clinical Endocrinologists (AACE), 245 Riverside Avenue, Suite 200, Jacksonville, FL 32202.

A PowerPoint Teaching Slide Kit will be available soon from the Endocrine Education Resource Library at the [AACE Web site](#).

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on June 30, 2006. The information was verified by the guideline developer on July 18, 2006.

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