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Management of Hypertension	ACA Standards: 4-4359M, 4-4367		
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Management of Hypertension

Blood pressure should be measured and recorded at every health services clinic visit. If an elevated blood pressure is obtained, it should be confirmed on two separate follow-up visits on separate days. If blood pressure remains elevated on three separate occasions, a diagnosis of hypertension is made.

Elevated blood pressure is defined as systolic BP >140 or diastolic BP > 90 (JNC8).

I. Initial Evaluation

The initial evaluation should determine if the patient has target organ disease or other cardiovascular risk factors. A newly diagnosed patient should also be evaluated for identifiable causes of hypertension. Documentation of the chronic illness will be documented in accordance with [OP-140137](#) entitled “Chronic Illness Management” and on the “Chronic Illness and/or Routine/Physical Examination” [DOC 140137A](#).

A. History

1. Modifiable risk factors – obesity, physical inactivity, smoking, sodium intake, fat intake, diabetes mellitus and dyslipidemia
2. Medications, including over the counter and illicit drugs
3. Family history – hypertension, diabetes, coronary artery disease, stroke, hyperlipidemia.

B. Examination

1. Complete set of vital signs (weight, temperature, pulse, respiration, blood pressure in both arms) and calculation of body mass index (BMI)

Height (Inches)	Normal						Overweight					Obese						Extreme Obesity																				
	BMI	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	
58	91	96	100	105	110	115	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	213	218	223	228	233	238	243	248	253	258	263	268	273	278
59	94	99	104	109	114	119	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	213	218	223	228	233	238	243	248	253	258	263	268	273	278	283
60	97	102	107	112	118	123	132	137	142	147	152	157	162	167	172	177	182	187	192	197	202	207	212	217	222	227	232	237	242	247	252	257	262	267	272	277	282	287
61	100	106	111	116	122	127	136	141	146	151	156	161	166	171	176	181	186	191	196	201	206	211	216	221	226	231	236	241	246	251	256	261	266	271	276	281	286	291
62	104	109	115	120	126	131	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295
63	107	113	118	124	130	135	144	149	154	159	164	169	174	179	184	189	194	199	204	209	214	219	224	229	234	239	244	249	254	259	264	269	274	279	284	289	294	299
64	110	116	122	128	134	140	149	154	159	164	169	174	179	184	189	194	199	204	209	214	219	224	229	234	239	244	249	254	259	264	269	274	279	284	289	294	299	304
65	114	120	126	132	138	144	153	158	163	168	173	178	183	188	193	198	203	208	213	218	223	228	233	238	243	248	253	258	263	268	273	278	283	288	293	298	303	308
66	118	124	130	136	142	148	157	162	167	172	177	182	187	192	197	202	207	212	217	222	227	232	237	242	247	252	257	262	267	272	277	282	287	292	297	302	307	312
67	121	127	134	140	146	153	162	167	172	177	182	187	192	197	202	207	212	217	222	227	232	237	242	247	252	257	262	267	272	277	282	287	292	297	302	307	312	317
68	125	131	138	144	151	158	166	171	176	181	186	191	196	201	206	211	216	221	226	231	236	241	246	251	256	261	266	271	276	281	286	291	296	301	306	311	316	321
69	128	135	142	149	155	162	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325
70	132	139	146	153	160	167	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330
71	136	143	150	157	165	172	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335
72	140	147	154	162	169	177	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340
73	144	151	159	166	174	182	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345
74	148	155	163	171	179	186	197	202	207	212	217	222	227	232	237	242	247	252	257	262	267	272	277	282	287	292	297	302	307	312	317	322	327	332	337	342	347	
75	152	160	168	176	184	192	202	207	212	217	222	227	232	237	242	247	252	257	262	267	272	277	282	287	292	297	302	307	312	317	322	327	332	337	342	347	352	
76	156	164	172	180	189	197	208	213	218	223	228	233	238	243	248	253	258	263	268	273	278	283	288	293	298	303	308	313	318	323	328	333	338	343	348	353	358	363

Source: Adapted from Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report.

2. Funduscopic exam by health care provider
3. Neck – bruits, jugular venous distention, thyromegaly
4. Heart – rate, rhythm, size, point of maximum impulse, murmurs
5. Lungs – rales, wheezes
6. Abdomen – bruit, enlarged kidneys, masses, abnormal aortic pulsation
7. Extremities – pulses, bruits, edema
8. Neurologic signs

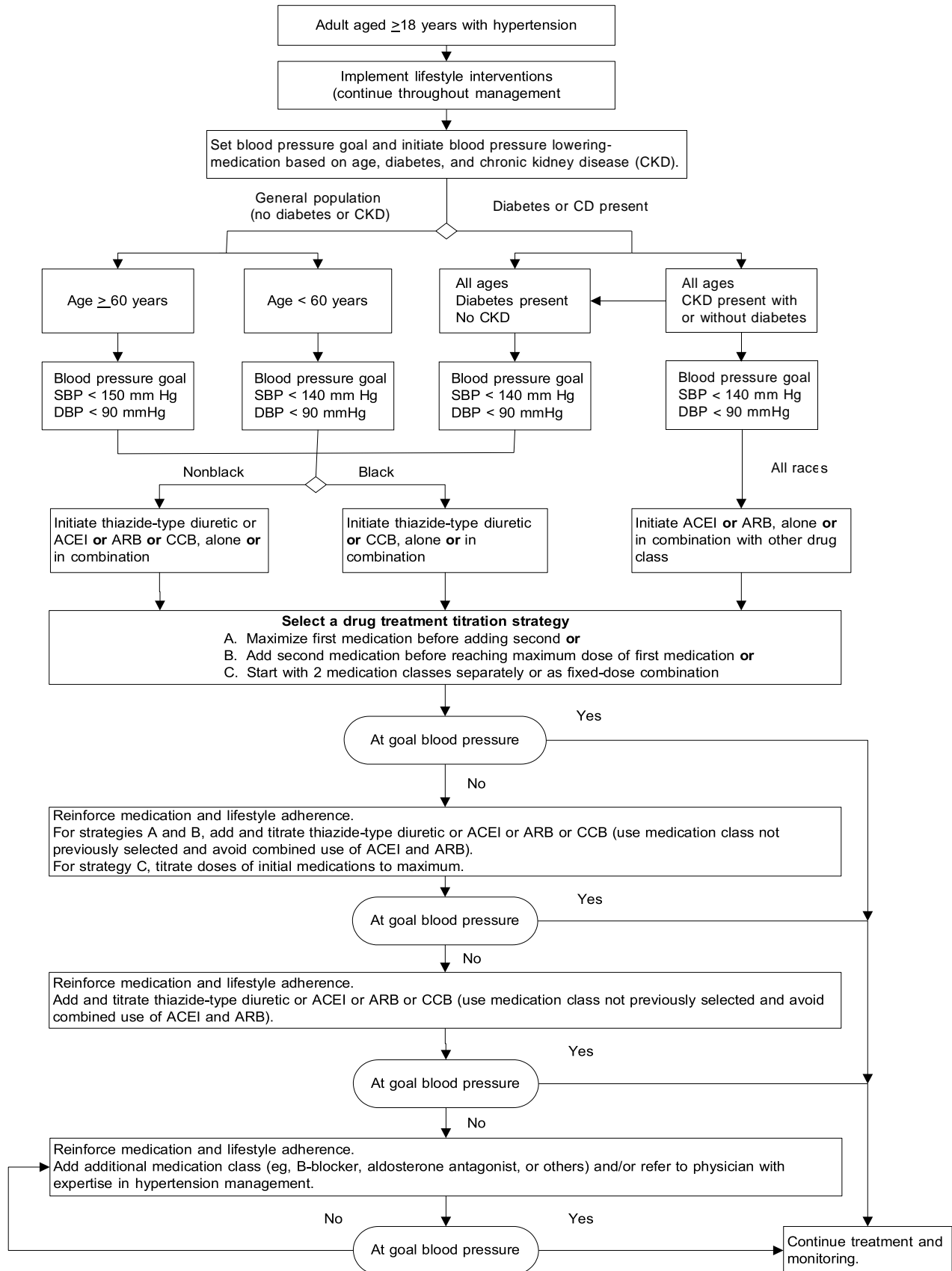
C. Lab and other Diagnostic Studies

1. Complete metabolic profile, TSH
2. Complete blood count
3. Urine analysis
4. EKG, baseline. After baseline, at discretion of Provider.
5. Chest X-ray if indicated
6. Lipid

- D. Identifiable Causes of Hypertension
1. Sleep apnea
 2. Drug induced/related
 3. Chronic kidney disease
 4. Primary aldosteronism
 5. Renovascular disease
 6. Cushing's syndrome or steroid therapy
 7. Pheochromocytoma
 8. Coarctation of aorta
 9. Thyroid/parathyroid disease
- II. Treatment (See Eighth Joint National Committee guidelines, JNC8)
- A. Recommendations for Management of Hypertension
1. In the general population aged ≥ 60 years, initiate pharmacologic treatment to lower blood pressure (BP) at systolic blood pressure (SBP) ≥ 150 mm Hg or diastolic blood pressure (DBP) ≥ 90 mm Hg and treat to a goal SBP < 150 mm Hg and goal DBP < 90 mm Hg. (Strong Recommendation – Grade A)
- Corollary Recommendation
- In the general population aged ≥ 60 years, if pharmacologic treatment for high BP results in lower achieved SBP (eg, < 140 mm Hg) and treatment is well tolerated and without adverse effects on health or quality of life, treatment does not need to be adjusted. (Expert Opinion – Grade E)
2. In the general population < 60 years, initiate pharmacologic treatment to lower BP at DBP ≥ 90 mm Hg and treat to a goal DBP < 90 mm Hg. (For ages 30-59 years, Strong Recommendation – Grade A; For ages 18-29 years, Expert Opinion – Grade E)
 3. In the general population < 60 years, initiate pharmacologic treatment to lower BP at SBP ≥ 140 mm Hg and treat to a goal SBP < 140 mm Hg. (Expert Opinion – Grade E)
 4. In the population aged ≥ 18 years with chronic kidney disease (CKD), initiate pharmacologic treatment to lower BP at SBP ≥ 140 mm Hg or DBP ≥ 90 mm Hg and treat to goal SBP < 140 mm Hg and goal DBP < 90 mm Hg. (Expert Opinion – Grade E)

5. In the population aged ≥ 18 years with diabetes, initiate pharmacologic treatment to lower BP at SBP ≥ 140 mm Hg or DBP ≥ 90 mm Hg and treat to a goal SBP < 140 mm Hg and goal DBP < 90 mm Hg. (Expert Opinion – Grade E)
6. In the general nonblack population, including those with diabetes, initial antihypertensive treatment should include a thiazide-type diuretic, calcium channel blocker (CCB), angiotensin-converting enzyme inhibitor (ACEI), or angiotensin receptor blocker (ARB). (Moderate Recommendation – Grade B)
7. In the general black population, including those with diabetes, initial antihypertensive treatment should include a thiazide-type diuretic or CCB. (For general black population: Moderate Recommendation – Grade B; for black patients with diabetes: Weak Recommendation – Grade C)
8. In the population aged ≥ 18 years with CKD, initial (or add-on) antihypertensive treatment should include an ACEI or ARB to improve kidney outcomes. This applies to all CKD patients with hypertension regardless of race or diabetes status. (Moderate Recommendation – Grade B)
9. The main objective of hypertension treatment is to attain and maintain goal BP. If goal BP is not reached within a month of treatment, increase the dose of the initial drug or add a second drug from one of the classes in recommendation 6 (thiazide-type diuretic, CCB, ACEI, or ARB). The clinician should continue to assess BP and adjust the treatment regimen until goal BP is reached. If goal BP cannot be reached with 2 drugs, add and titrate a third drug from the list provided. Do not use an ACEI and an ARB together in the same patient. If goal BP cannot be reached using only the drugs in recommendation 6 because of a contraindication or the need to use more than 3 drugs to reach goal BP, antihypertensive drugs from other classes can be used. Referral to a hypertension specialist may be indicated for patients in whom goal BP cannot be attained using the above strategy or for the management of complicated patients for whom additional clinical consultation is needed. (Expert Opinion – Grade E)

B. Algorithm



III. Goals of Therapy

- A. In uncomplicated hypertension the goal BP is systolic < 140 and diastolic < 90.
- B. In patients with diabetes, or renal disease, the goal BP is systolic <140 and diastolic <90.
- C. Many patients who are hypertensive will require 2 or more antihypertensive medications to achieve their BP goals.
- D. If patient meets all goals of treatment without a need for hypertensive medication for 6 months a health care provider can discharge them from Chronic Clinic enrollment.

IV. Routine follow-up

Once antihypertensive therapy is initiated or changed, most patients should return for follow-up and medication adjustment at least monthly until BP goals are reached. Once goals of therapy have been reached and the patient is stable, Routine follow-up in chronic clinic should be arranged as follows:

- A. Chronic Clinic Visit
 1. Review medication regimen – adherence, side effects
 2. Interval history – lifestyle modifications, new symptoms
 3. Exam – Complete set of vital signs (blood pressure, temperature, pulse, respirations, weight, heart sounds, lung sounds, edema)
 4. Patient education – lifestyle modifications, medication adherence, long-term complications of hypertension
 5. Categorize in accordance with “Severity Classification of Common Chronic Illness” ([OP-140137](#), [Attachment A](#)).
- B. Annually
 1. Interval history – as above
 2. Complete physical exam
 3. EKG baseline (then by provider discretion)
 4. Oral exam by health care provider with referral to dental as needed.
 5. Funduscopic exam by the health care provider. Refer to optometrist as indicated.

6. Laboratory
 - a. CBC
 - b. CMP
 - c. FLP every 3 years
 - d. Urinalysis (or dipstick)

7. Vaccines

- a. Influenza (annually)
- b. Pneumovax (revaccination is recommended only if the patient received a first dose prior to age 65. Give the second dose at or after age 65 only when 5 or more years have elapsed since the previous dose).

V. References

OP-140137 entitled "Chronic Illness Management"

Based on Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure "The eighth report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure [JNC 8]

VI. Action

The chief medical officer, Health Services will be responsible for compliance with this procedure.

The chief medical officer, Health Services will be responsible for the annual review and revisions.

Any exceptions to this procedure will require prior written approval from the director.

This procedure will be effective as indicated.

Replaced: Medical Services Resource Manual 140137-04 entitled "Management of Hypertension" dated November 7, 2017.

Distribution: Office of Medical Services Resource Manual

Referenced Forms

Title

Located In

[DOC 140137A](#)

Chronic Illness Note/Physical Examination”

[OP-140137](#)

Attachments

[Attachment A](#)

Severity Classification of Common Chronic Illness”

[OP-140137](#)