

ENTITLEMENT ELIGIBILITY GUIDELINES HYPERTENSION

MPC 00725
ICD-9 401, 405

DEFINITION

Since there is no dividing line between normal and high blood pressure, levels have been established by epidemiological research and medical consensus to define persons with increased risk of developing cardiovascular morbidity and/or those who will benefit from medical therapy aimed at reduction of blood pressure.

Hypertension, for the purposes of VAC, is the persistent elevation in blood pressure to levels of, or greater than, 140 mmHg systolic and/or 90 mmHg diastolic, or where appropriate clinical management for hypertension is being administered by a qualified medical practitioner. Both systolic and diastolic hypertension are significant.

A single borderline reading in the 140/90 range is difficult to evaluate in isolation. It is not generally considered as indicative of hypertension unless followed by evidence of persistent hypertension.

Hypertension is classified as essential and secondary (see Anatomy and Physiology). **Pension entitlement for hypertension as a separate entity should be sought only in cases of essential hypertension.**

DIAGNOSTIC STANDARD

Diagnosis of hypertension by a qualified medical practitioner using the Canadian Hypertension Consensus guidelines applicable at the time of diagnosis is required. Repeated blood pressure recordings are essential for proper diagnosis of hypertension.

An accurate determination of hypertension means establishing the diagnosis of hypertension by the accurate measurement of blood pressure on at least three occasions over a period of several weeks.

Blood work and x-rays may be taken to rule out secondary causes of hypertension. To obtain accurate measurement of blood pressure, the conditions for measurement should be standardized as much as possible before readings by ensuring the following:

- A mercury sphygmomanometer should be used in the diagnosis of hypertension;
- Persons should be relaxed and seated. Additional information may be provided by supine and standing readings. This is particularly important in the elderly and diabetics, as both groups are prone to postural hypertension;
- The bare arms should be supported and positioned at the heart level;
- A cuff of suitable size should be applied evenly to the exposed upper arm, with the bladder of the cuff positioned over the brachial artery. The bladder length should be at least 80%, and the width at least 40%, of the circumference of the upper arm;
- The cuff should be snugly wrapped around the upper arm and inflated to 30 mmHg above the pressure at which the radial pulse disappears;
- In older persons, if the radial artery remains palpable when the cuff pressure exceeds the expected systolic pressure, the cuff reading may be inappropriately high (pseudo-hypertension);
- The cuff should be deflated at a rate no greater than 2 mmHg/beat (2mmHg/sec). For the systolic reading, the first appearance of repetitive sound (phase I Korotkoff) should be used;
- If initial readings are high, several further readings should be taken after five minutes of quiet rest;
- On each occasion two or more readings should be averaged. If the first two readings differ by more than 4 mmHg systolic or 4 mmHg diastolic, further readings should be taken. For the diastolic reading, the disappearance of sound (phase V Korotkoff) should be used. Muffling of sound (phase IV Korotkoff) should only be used if sound continues toward zero.

Heart rate and rhythm should be measured and recorded at the same time. When the cardiac rhythm is irregular, e.g. atrial fibrillation, the systolic pressure should be recorded as an average of a series of phase I readings, and diastolic pressures should be recorded as an average of phase IV and V readings.

ANATOMY AND PHYSIOLOGY

Arterial pressure fluctuates in most persons, whether they are normotensive or hypertensive. Fluctuations may vary over a wide range. For example, during periods of emotional stress blood pressure can temporarily increase to 220/90, and during restful sleep blood pressure can decrease to 90/40 in the same individual.

Persons who are classified as having *labile hypertension* are those who generally experience unusually wide swings in blood pressure readings.

The level of *systolic* pressure is important in assessing the influence of arterial pressure on cardiovascular morbidity. A reduction in mortality and morbidity with treatment, specifically in the elderly, has been documented. The primary beneficial effect is a reduction in strokes. Other significant factors that modify the influence of blood pressure on the frequency of morbid cardiovascular events are age, race, and sex, with young black males being most adversely affected by hypertension.

Sustained hypertension can become accelerated or enter a malignant phase, although this is unusual in treated persons. *Accelerated hypertension* is defined as a significant recent increase over previous hypertensive levels associated with evidence of vascular damage on fundoscopic examination, and without papilledema. While a person with *malignant hypertension* often has a blood pressure above 200/140, the condition is defined by the presence of papilledema, usually accompanied by retinal hemorrhages and exudates, rather than by the absolute pressure level.

Classification

Hypertension is classified as (A) essential, and (B) secondary.

Essential hypertension is a primary hypertension of unknown cause (see further explanation in PENSION CONSIDERATIONS, section A). Ninety-five percent of the cases of hypertension are of the essential type. Onset is as described under the DEFINITION section.

Secondary hypertension occurs as an accepted manifestation of certain diseases. **In cases where it forms a part of a pensioned condition, a separate consequential ruling for hypertension is not required as it will be included in the entitlement and assessment of the pensioned condition.** The primary diseases, of which renal disease and certain endocrine diseases are the most important, include:

- (1) Renal Hypertension - resulting from:
 - chronic glomerulonephritis
 - chronic pyelonephritis
 - polycystic kidney disease
 - renal vascular stenosis
- (2) Endocrine Hypertension - resulting from:
 - adrenal hypertension (e.g. Cushing's disease)
 - acromegaly

 - hypercalcemia
 - oral contraceptives
 - pheochromocytoma
- (3) Coarctation of the Aorta

- (4) Toxemia of pregnancy
- (5) Porphyria

CLINICAL FEATURES

Even in its mild forms, hypertension is a progressive and lethal disease if left untreated.

The classical clinical finding is an elevation of blood pressure above the normal range. There are usually no other clinical symptoms, although the individual may be aware of early morning headache and forceful pulse. Hypertension is often detected on routine medical examination, or after a vascular complication. The first manifestation may be the occurrence of a vascular complication from arteriosclerosis, e.g. a stroke or heart attack.

The course of hypertension is so variable that no predictions can be made. The extremes of progression can be stated as follows:

1. Persistence of low level hypertension with little evidence of worsening or complications for 20-30 years.
2. Extremely rapid development of increasingly high levels of hypertension associated with severe progressive renal damage and death in *accelerated or malignant* hypertension.

The development of the disease is slow and gradual. By the time blood pressure becomes elevated, the initiating factors may no longer be apparent, because they may have been normalized by multiple compensatory interactions.

Epidemiological data shows a direct relationship between blood pressure and cardiovascular events at all levels of blood pressure. Even individuals who have relatively mild disease (without evidence of end organ damage) which is left untreated for 7 to 10 years have a high risk of developing significant complications. More than 50 percent will eventually have end organ damage related to the hypertension itself, such as cardiomegaly, congestive heart failure, retinopathy, a cerebrovascular accident, and/or renal insufficiency.

PENSION CONSIDERATIONS**A. CAUSES AND/OR AGGRAVATION**

THE TIME LINES CITED BELOW ARE NOT BINDING. EACH CASE SHOULD BE ADJUDICATED ON THE EVIDENCE PROVIDED AND ITS OWN MERITS.

1. ESSENTIAL HYPERTENSION

There are a number of genetic variables which affect development of an entire range of blood pressure values. The vast majority of persons with hypertension have essential hypertension, for which the cause is unknown. The following risk factors are, however, known to contribute to the development and/or aggravation of essential hypertension in some individuals:

a) Obesity prior to clinical onset or aggravation

Obesity is an increase in body weight of fat accumulation, and excludes edema, peritoneal or pleural effusion, and muscle hypertrophy.

For VAC purposes, obesity means a significant increase in weight, of the order of a 20% increase in baseline weight, and a body mass index (BMI) of 30 or greater.

BMI = $\frac{\text{weight in kgs}}{\text{height in metres squared}}$

b) Alcohol dependency or alcohol abuse at the time of the diagnosis or aggravation

Diagnostic criteria for alcohol dependency and alcohol abuse are those defined in the DSM-IV.

c) Ingestion of greater than 10 grams (175 mmol or 3 teaspoons) of salt supplements a day prior to clinical onset or aggravation

On average, this amount of salt would be ingested for a continuous period of at least 6 months immediately before the accurate determination of hypertension. To induce and aggravate hypertension, some of the excess sodium must be retained by the kidneys.

d) Stress prior to clinical onset or aggravation

Prolonged and exceptional physical and /or emotional stress may contribute to onset or aggravation. Each case must be decided on its own merits. Acute physical and/or emotional stress may cause a temporary rise in blood pressure which returns to normal and does not produce hypertension.

e) Smoking prior to aggravation

No recommendation for a time interval can be made.

f) Inactivity prior to aggravation

No recommendation for a time interval can be made.

g) Inability to obtain appropriate clinical management**2. SECONDARY HYPERTENSION**

As a manifestation of other diseases, conditions, and/or treatment, secondary hypertension is considered as part of the original disease, condition, and/or treatment for pension purposes. The following are relevant:

a) Renal artery stenosis at time of clinical onset or aggravation

Renal artery stenosis is complete or partial (at least 50%) occlusion which produces clinical manifestations of poorly controlled hypertension, renal impairment, or acute pulmonary edema. Causes of renal artery stenosis include atherosclerosis, fibromuscular dysplasia, dissection, fibrosis or scarring (following surgery or trauma), and external compression.

b) Chronic renal failure at time of clinical onset or aggravation

Chronic renal failure is renal disease of a sustained nature that is not reversible and leads to destruction of nephron mass. It is associated with a demonstrable functional abnormality of the kidney.

c) Chronic renal parenchymal disease at time of clinical onset or aggravation

Chronic renal parenchymal disease is the chronic irreversible renal parenchymal damage from a number of conditions, including but not limited to:

- chronic pyelonephritis
- chronic glomerulonephritis
- diabetic nephrosclerosis
- obstructive nephropathy
- analgesic nephropathy
- renal tuberculosis
- polycystic kidney disease
- renal ischemia/infarction

d) A renin-secreting neoplasm at time of the clinical onset or aggravation

A renin-secreting neoplasm is a neoplasm that secretes renin, an enzyme that converts aniotensinogen to angiotensin I.

e) Hyperinsulinemia/insulin resistance prior to clinical onset or aggravation

This is a longstanding association, particularly with accompanying obesity, but also in nonobese hypertensives. It does not apply to some ethnic groups, such as Pima Indians, but has been found in blacks, Asians and whites.

f) Cushing's syndrome, Primary aldosteronism, or Pheochromocytoma at time of clinical onset or aggravation

Cushing's syndrome is a condition due to hyperadrenocorticism resulting from neoplasms of the adrenal cortex or the anterior lobe of the pituitary, or from prolonged excessive intake of glucocorticoids for therapeutic purposes.

Primary aldosteronism is a syndrome associated with hypersecretion of the major adrenal mineralocorticoid, aldosterone.

Pheochromocytoma is a neoplasm of chromaffin tissue usually located in the adrenal medulla or sympathetic ganglion, which produces, stores and secretes catecholamines.

g) A collagen vascular disease with renal involvement at time of clinical onset or aggravation

Collagen vascular disease is an autoimmune disorder which causes vasculitis,

e.g. polyarteritis nodosa.

- h) An injury to a kidney causing scarring of the kidney resulting in loss of kidney function before clinical onset or aggravation
- i) An injury to a renal artery causing stenosis of that artery before clinical onset or aggravation
- j) Undergoing treatment with a drug for a condition for which the drug cannot be ceased or substituted and in which the drug has caused an increase in blood pressure at time of clinical onset or aggravation

Medical evidence should be obtained to demonstrate the following:

Whether hypertension is associated with the taking of a particular drug;
and

Whether the drug cannot be ceased or substituted.

An association between drug treatment and hypertension cannot be demonstrated solely on a temporal connection between the taking of the drug and onset or aggravation of hypertension.

Aggravation of hypertension through drug treatment is not a temporary worsening.

Undergoing treatment with a drug includes, but is not limited to, drug therapy with glucocorticosteroids and estrogens.

- k) Low birth weight prior to clinical onset

Low birth weight as a consequence of fetal undernutrition is known to be followed by an increased incidence of high blood pressure later in life.

- l) Inability to obtain appropriate clinical management

B. MEDICAL CONDITIONS WHICH ARE TO BE INCLUDED IN ENTITLEMENT/ASSESSMENT

- left ventricular hypertrophy

C. COMMON MEDICAL CONDITIONS WHICH MAY RESULT IN WHOLE OR IN PART FROM HYPERTENSION AND/OR ITS TREATMENT

- atherosclerosis, which includes:
 - arteriosclerotic heart disease
 - arteriosclerotic cerebrovascular disease
 - arteriosclerotic peripheral vascular disease
- cardiac failure*
- hemorrhagic stroke
- chronic renal failure

* For VAC pension purposes, cardiac failure is only acceptable as a diagnosis for consequential claims.

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Entitlement Eligibility Guidelines - HYPERTENSION

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