RISK-BASED APPROACH TO THE HYPERTENSIVE PATIENT
LABORATORY EVALUATION

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Routine and optional laboratory tests

Investigation of all patients with hypertension

1. Urinalysis
2. Complete blood count
3. Blood chemistry (Potassium, Sodium and creatinine)
4. Fasting Glucose
5. Fasting total cholesterol and high density lipoprotein cholesterol (HDL), low density lipoprotein cholesterol (LDL), triglycerides
6. Standard 12 leads ECG

For specific patient subgroups

1. For those with diabetes or renal disease: 24hour or over night urine protein, as lower goal blood pressure targets are appropriate.
2. For those with an increased creatinine or renal disease: renal ultrasound to exclude obstruction.
3. For those with a symptom triad of headache, sweating, palpitations; measure 24 hour urine catecholamine metabolites to assess for pheochromocytoma.

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Investigation for renovascular hypertension

Red Flags for renovascular hypertension

- Sudden onset or
- Worsening of hypertension at age below 30 or over 55,
- Abdominal bruit,
- Hypertension resistant to three or more drugs,
- Rise in creatinine with a ACE inhibitor or angiotensin receptor blocker,
- Presence of overt atherosclerotic lesions, or
- Recurrent pulmonary edema of unknown cause.

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Captopril enhanced radioisotope renal scan

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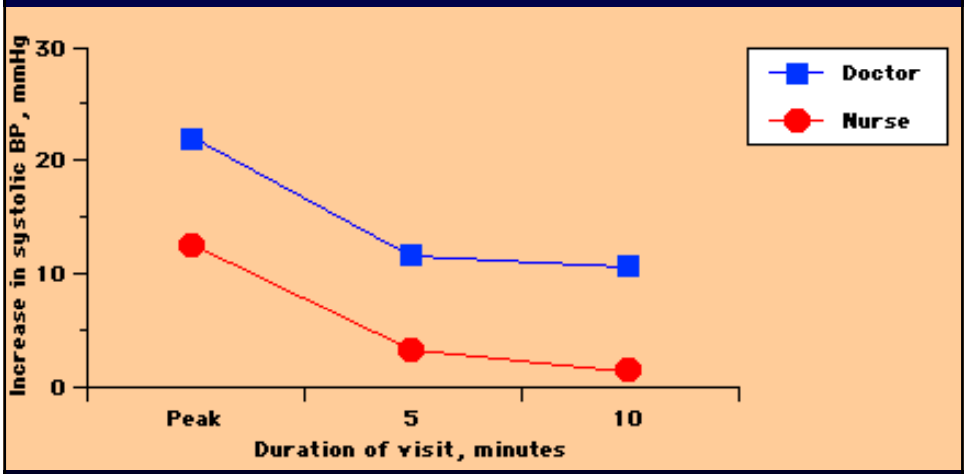
BP response to office visit



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Home Monitoring of BP: Specific Role in Selected Patients

Which patients?

- **Non adherence**
- **Hypertension and diabetes**
- Office-induced blood pressure elevation

Normal Home BP? →

Further assess Using Ambulatory blood pressure monitoring

Home BP < 135/ or / 85 mm Hg

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Home Monitoring of BP: Specific Role in Selected Patients

How to?

Use devices:

- appropriate for the individual (cuff size)
- have met the standards of the AAMI and/or the BHS

Values over **135 / 85 mm Hg** should be considered elevated

Adequate patient training in:
- measuring their BP
- interpreting these readings

Regular verifications
- accuracy of the device
- measuring techniques

Devices that have met the standards of the Association for the Advancement of Medical Instrumentation and/or The British Hypertension Society.

Self measurement can help to improve patient adherence

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ADDITIONAL WORK-UP IN SELECTED PATIENTS

Ultrasonography

Ambulatory BP monitoring

Micro-albuminuria

Ultrasonography in hypertension

Echocardiography: indicated for:

- Borderline HTN without risk factors or evident end-organ damage: LVH necessitates drug therapy.
- Refractory hypertension or office hypertension of doubted significance.
- Known or suspected concomitant heart disease

Echocardiography is NOT indicated for routine measurement of LV mass or wall thickness.

Ultrasonography: other techniques

Abdomen scan:
- Kidney size & structure
- Renal / adrenal masses
- Aortic aneurysm
- Renal arterial Duplex

Peripheral arterial duplex
- Stenotic lesions
- Testing endothelial function

Carotid / vertebral Duplex
- Stenotic lesions
- Intima-media thickness

Ambulatory Monitoring of BP: To Be Considered for Specific Indications *

Which patients?
Those with suspicion of office-induced BP elevation

Untreated
- Mild (Stade 1) to moderate (Stade 2) clinic blood pressure elevation and without target organ damage

Treated patients
- Apparent resistance to drug therapy
- Symptoms suggestive of hypotension
- Fluctuating office blood pressure readings

* When available

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Ambulatory Monitoring of BP: To Be Considered for Specific Indications

How to ?

Use validated devices

How to interpret?

Mean daytime ambulatory blood pressure

over 135 / 85 mm Hg

is considered elevated

* A drop in nocturnal BP of < 10% is associated with increased risk of CV events.

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Special laboratory tests

Micro-albuminuria [24H UAE >30 mg] with normal urine sediment.

Clinical indication: early detection of nephropathy in diabetic patients.

Plasma renin activity:

Clinical indication: suspected primary aldosteronism.

Possible causes of secondary drug resistance

- Poor BP measurement technique.
- Office HTN.
- Pseudo-HTN.
- Incompliance with medication or diet.
- Inappropriate drug dosing or combination.
- Drug-induced HTN.
- Renal function deterioration.

- Newly developing renal parenchymal, renal vascular, or endocrine cause.
- Missed cause of 2ry HTN on initial evaluation.