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## Principles

These General Medical Hypertension Clinic Guidelines have been developed to help provide guidance to both GPs and hospital doctors about which hypertensive patients could be referred to General Medicine for an outpatient opinion. These guidelines also provide recommendations for the initial work-up.

## Appropriate Referrals

Most hypertensive patients are very well managed in Primary Care and only a small number of individuals will need a specialist medical opinion.

Some patients are more appropriately referred to a subspeciality:

- [Renal](#) if CKD, haematuria/proteinuria, structural kidney disease, proven renal artery stenosis
- [Endocrinology](#) if investigation has already suggested an endocrine cause
- **Cardiology** if complicated by heart failure.

## General Medicine Outpatient Referrals

The following hypertensive patients could be referred to General Medicine outpatients:

### ➤ Suspected Secondary Hypertension

Patients with suspected secondary hypertension (< 5% of all cases) should initially be investigated in Primary Care. The recommended indications for investigation and suggested tests are shown below.

As noted, if an Endocrine or Renal cause is found refer to the appropriate service.

If the need for further investigation is uncertain please refer to General Medical for advice.

### ➤ Difficult to Control or Resistant Hypertension

- Resistant hypertension despite 3 or more drugs in younger patients
- Medication intolerance or contraindications

### ➤ Special Situations

- Variable BP and/or significant orthostatic hypotension
- 'White coat' hypertension is suspected and GP unable to organise ambulatory BP monitoring

Refer to the [Map of Medicine](#) guidelines for additional recommendations.

GM will offer a single consultation and do not provide long term follow up of 'difficult' hypertension.

## Process

See the [General Medicine Outpatient Guidelines](#) for how referrals are processed and waiting times.

## Referral for Admission

Refer urgently for admission if there is evidence of:

- Malignant or accelerated hypertension
- Hypertensive emergency (encephalopathy, aortic dissection)
- Rapidly progressive end-organ damage or impending complications (TIA, left ventricular failure)

Contact the General Medical registrar on call.

Call the Obstetrics registrar for pregnant women with either severe hypertension or with pre-eclampsia.

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## Routine Investigations

The following investigations should be done in all hypertensive patients;

- Urinalysis for protein / blood and urine microscopy if positive
- Serum electrolytes, creatinine
- Random plasma glucose – if elevated, repeat with fasting sample
- HbA1c in high risk groups
- Fasting lipid profile
- ECG to look for LVH using voltage criteria
- Chest X-ray

Please do these routine tests and any indicated relevant selected investigations before referral.

## Selected Investigations and Referral to Sub-specialities

### ➤ Endocrine Investigations for a Secondary Cause and Endocrine Referral

#### Indications:

- Hypokalemia, including diuretic induced
- New onset hypertension at age under 35 years
- Clinical suspicion of endocrine disease
  - Pheochromocytoma (palpitations headache sweating)
  - Known adrenal mass
  - Features of Cushing's (including unexplained osteoporosis and proximal myopathy)
  - Features of acromegaly
- Resistant hypertension in younger patients despite 3 or more agents
- New onset severe hypertension over 70 yrs of age

#### Investigations:

- Patients with Hypokalemia
  - Test for Conn's syndrome, Pheochromocytoma and Cushing's syndrome
- Hypokalemia induced by diuretics
  - Test for Conn's syndrome (Correct K before tests)
- Onset hypertension age <35
  - Test for Conn's syndrome
  - Consider testing for Pheochromocytoma and Cushing's syndrome
- Resistant hypertension despite 3 or more agents
  - Test for Conn's syndrome, Pheochromocytoma and Cushing's syndrome
- New onset severe hypertension age >70
  - Test for Conn's syndrome
  - Consider testing for Pheochromocytoma and Cushing's syndrome

#### Initial screening tests:

- Conn's syndrome:** Aldosterone and plasma renin activity 0800 upright sample  
Screen while on usual anti hypertensive medications. Correct K pre test
- Pheochromocytoma:** 24-hour urinary metanephrines or  
Plasma metanephrines
- Cushing's syndrome:** 24-hour urinary cortisol+creatinine or  
1mg overnight dexamethasone suppression test
- Acromegaly:** IGF1

#### Patients to be referred to the Endocrine service:

If any of these tests are positive please refer to Endocrine services:

- Raised plasma metanephrines or 24-hour urinary metanephrines
- Suppressed renin with increased aldosterone
- Abnormal 24-hour urinary cortisol or dexamethasone suppression test
- Increased IGF1
- Adrenal masses

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## ➤ Renal Investigations for a Secondary Cause and Renal Referral

### Renal Ultrasound

If the patient has an elevated creatinine, proteinuria or haematuria consider renal imaging.

### Studies for Renal Artery Stenosis

Consider investigation in:

1. progressive CKD of uncertain aetiology in a high risk patient
2. flash pulmonary oedema
3. acute on chronic renal failure in a high risk patient after ACEI/ARB therapy is started
4. a patient with features indicating possible fibromuscular hyperplasia (young women with bruits)
5. resistant hypertension (poor BP control on 3+ agents in max doses, including a diuretic)
6. accelerated hypertension

We suggest duplex scans as the first line investigation rather than MRA. The Vascular Surgeons, Renal Physicians and Midland Vascular Laboratory team have discussed the process and indications for requesting duplex scans.

Requests for duplex scans will now be triaged by the Renal Service and any request not meeting the above criteria will be returned to the requestor. MRA may still be required in selected cases. The Renal Service will also co-ordinate and triage MRA referrals.

### Patients to be referred to the Renal service:

Patients with hypertension who also have the following can be referred directly to Renal Services:

- eGFR <60ml/min and decrease in eGFR >5ml/min/yr
- Protein: creatinine ratio >100mg/mmol and/or glomerular haematuria
- Inherited kidney diseases e.g. polycystic kidney disease
- Structural kidney disease e.g. reflux, small kidney unilaterally, obstructive atrophy
- Proven renal artery stenosis (see above)

## Other Investigations

### Echocardiography

- Borderline untreated hypertension, where presence of LVH may influence a decision to treat
- Resistant hypertension, where a lack of LVH may modify treatment targets

Currently Waikato cannot offer echocardiograms in the public system for hypertension alone.

### 24-hour Ambulatory Blood Pressure Monitoring (ABPM)

Indications for ABPM include:

- Suspected “white-coat” hypertension
- Borderline hypertension
- Hypertension seemingly resistant to treatment
- Symptoms of orthostatic hypotension

Home monitoring using a validated device is almost as good and could be done as an alternative or before ABPM. We can arrange ABPM for patients if this cannot be done in Primary Care.

As part of cost-effective management and treatment of hypertension, the NICE guidelines recommend that GP practices invest in 24-hour BP monitors to aid monitoring of therapy.

As a general rule, the daytime average is used, rather than the 24-hour mean value. Threshold and targets for ABPM and home monitoring need to be lower in order to reflect “clinic values”.

### Obstructive sleep apnoea

Refer to respiratory/sleep service

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