

12 Hypertension

Hypertension is raised blood pressure and this is common in the Western world. Drugs are the mainstay of conventional treatment for hypertension and they are usually taken for life. Many patients cannot take their medication, however, because of side-effects. According to a survey in November 1999 sponsored by the US Association of Black Cardiologists, some 36% of patients who are treated for hypertension change medications at least once because of severe side-effects. The most commonly reported side-effects were tiredness (22%) and dizziness (21%). Dr Frank James, president of the Association of Black Cardiologists, said: 'This survey highlights the extent of the tolerability problem in hypertension, which is widespread among all patient populations, and underscores the need for the medical community to continue searching for pharmacological alternatives. Surprisingly, the survey also presents some new challenges in treating high blood pressure, because the findings show that elevated systolic blood pressure is not being controlled to the recommended levels.' In other words, medication leads to intolerable side-effects in a significant number of patients and is often ineffective in controlling high blood pressure. However, despite this damning evidence regarding drug treatment for hypertension, Dr James still sees the need to look for further drugs.

A blood pressure reading consists of two figures (e.g. 120/80). The top figure (systolic pressure) relates to when the heart contracts, the bottom figure (diastolic pressure) to when the heart relaxes. The bottom reading is the important one, since this is the pressure that pertains to a state of relaxation. If it is high for persistent periods of time, it indicates a general heightened state of tension in the system. The systolic pressure is less important in terms of diagnosing hypertension.¹

Conventionally, hypertension is diagnosed if the blood pressure is consistently above 160/95, although this would seem to be a low figure for someone over the age of 65 or 70.

Hypertension	Blood pressure reading
Mild	140/90 to 159/99
Moderate	160/100 to 179/110
Severe	180/110 to 209/119
Crisis	A top figure of more than 210 and/or a bottom figure of more than 120

Table 12.1: Significance of blood pressure levels

Blood pressure varies with many factors and one reading means very little. It needs to be taken over several days and allowance made for factors such as exercise or stress. Certainly, people can be monitored over six months before a final diagnosis of hypertension is made. In the UK, the British Hypertension Society recommends that drug treatment should only be initiated if the bottom figure (diastolic pressure) exceeds 100 mm during the assessment period. For pressures between 90 and 100 mm, drug treatment should only be given if there is evidence of damage to organs such as the heart or kidneys. In practice, however, people are frequently diagnosed as having high blood pressure on the basis of one reading at a level below 100 mm for diastolic pressure.

Drugs used to treat hypertension are diuretics and hypotensive agents (drugs that lower blood pressure). The precise drugs selected are frequently determined by the personal preference of the prescribing doctor. Most people attending the clinic with hypertension will be taking one or more of the drugs listed below.

There is a small group of people with so-called 'malignant' hypertension (see 'Crisis' in Table 12.1), where blood pressure levels are very high and the situation requires high doses of drugs. These cases should be

¹ The systolic figure is roughly 100 plus the person's age.

treated in conjunction with medical advice, as stopping or withdrawal of the drug may lead to serious consequences.

Clonidine

Generic name	Brand name	Dosage
clonidine	Catapres, Catapres Perlongets	High blood pressure: 0.15–1.2 mg daily (up to 2.4 mg daily in resistant cases)
	Dixarit, Menograin	Migraine: 100–150 mcg daily

Table 12.2: Clonidine

Uses: hypertension, migraine

Cautions: depression or a history of depression, Raynaud’s disease and other disorders of the circulation (brain, heart or extremities), kidney impairment.

Clonidine must not be withdrawn suddenly, because the blood pressure may rise sharply.

Effects

General: drowsiness, tiredness, fatigue

Cardiovascular: fluid retention, low blood pressure, palpitations, slow pulse rate, ankle swelling, cold hands

Gastrointestinal: dry mouth, constipation, nausea, vomiting, poor appetite, constipation, hepatitis

Urogenital: impotence, incontinence of urine, retrograde ejaculation in men

Central nervous system: dizziness, headache

Endocrine: breast enlargement in men

Women’s health: failure of orgasm in women

Psychological: euphoria, depression, restlessness at night, hallucinations, psychosis

Skin: rash

Strength level: 3

Methyldopa

Methyldopa is an older type of hypotensive drug and has been largely superseded by newer drugs. Its main side-effect is of low blood pressure, particularly when standing. Some years ago, my mother-in-law went to the funeral of her last sibling. She was, quite naturally, emotionally upset and developed headaches. Her GP took her blood pressure and prescribed methyldopa. That evening, after one dose of the medication, she got out of bed and promptly passed out. She was unconscious for two days in hospital. Fortunately, she recovered and went on to live for many years. This story illustrates the problems that can arise from diagnosing high blood pressure too quickly, the side-effects of medication and the problems that can arise when treating the elderly.

Generic name	Brand name	Dosage
methyldopa	Aldomet, Dopamet, Meldopa, Medomet	Adults: 500 mg–3 g daily

Table 12.3: Methyldopa

Uses: hypertension, migraine

When not to be used: liver disease such as hepatitis or cirrhosis, depression

Cautions: anyone who develops fever, raised liver enzymes or jaundice should stop treatment, as fatal liver damage can occur

Effects

General: drowsiness, fever, tiredness, weakness, fever

Cardiovascular: palpitations, slow pulse rate, worsening of angina pectoris, low blood pressure (when standing), oedema, high blood pressure, inflammation of heart muscle and pericardium

Respiratory: nasal stuffiness

Gastrointestinal: nausea, vomiting, abdominal distension, constipation, diarrhoea, flatulence, colitis, dry mouth, sore or 'black' tongue, pancreatitis, enlarged salivary glands, jaundice, raised liver enzymes, hepatitis

Urogenital: decreased libido, impotence, failure of ejaculation, dark urine

Musculoskeletal: muscle pains, joint pains

Central nervous system: dizziness, fainting, headache, pins and needles, worsening of Parkinson's disease, Bell's palsy, involuntary movements, light-headedness

Endocrine: breast enlargement in men

Women's health: no periods, breast enlargement, secretion of milk from the breast

Psychological: depression, nightmares, poor concentration, psychoses, poor memory

Blood: anaemia due to destruction of red blood cells that may be fatal, reduction in numbers of granulocytes (type of white blood cell), low platelet count leading to bleeding into the skin, prolonged bleeding after injury and spontaneous bruising

Skin: rash, eczema-like rash

Strength level: 3

Calcium channel blockers

Generic name	Brand name	Dosage
amlodipine	Istin, Norvasc	5–10 mg daily
diltiazem	Adizem, Angiozem, Angitil SR, Britiazim, Caldicard, Cardcal, Cardizem, Coras, Diltahexal, Dilzem, Entrydil, Slozem, Tildiem, Viazem XL, Zemtard	180–480 mg daily
felodipine	Agon, Plendil, Plendil ER	5–10 mg daily
isradipine	DynaCirc, Prescal	1.25–5 mg twice daily
lacidipine	Motens	2–4 mg daily
nicardipine	Cardene	20–30 mg 3 times daily
nifedipine	Adalat, Adalat Retard, Adapine, Angiopine, Beta-Adalat*, Calcilat, Cardifen, Cardilate, Coracten, Hypolar, Nifecard, Nifensar XL, Nyefax, Nif-Ten, Procardia, Systepin, Tensipine MR, Tenif*, Vasofed	15 mg–90 mg daily
nisoldipine	Sular, Syscor MR	10–40 mg daily
verapamil	Anpec, Berkatens, Bonceur, Calicard, Calan, Cordilox, Covera-HS, Isoptin, Q-med, Ravamil, Securon, Univer, Vasomil, Veracaps, Veralan, Verapress	120–480 mg daily

Table 12.4: Calcium channel blockers

Uses: hypertension, angina (verapamil may also be used for treatment of palpitations caused by abnormal atrial rhythms)

When not to be used: heart failure with symptoms of shock, aortic stenosis, unstable angina pectoris, during or within one month of a heart attack, acute attacks of angina, to prevent heart attacks

Cautions: heart failure, severe low blood pressure

Effects

General: lethargy, flushing, weakness, sleepiness, lymphatic gland enlargement

Cardiovascular: palpitations, rapid heart rate, slow heart rate, worsening of angina pectoris, ankle swelling, heart attack, oedema, angina, heart failure, low blood pressure, vasculitis (inflammation of small blood vessels that may lead to skin rashes, arthritis, bruising of the skin and kidney failure)

Respiratory: breathlessness, nosebleeds, stuffy nose

Gastrointestinal: nausea, altered bowel habit, jaundice, raised liver enzymes, poor appetite, constipation, diarrhoea, indigestion, vomiting, weight gain, high blood sugar, abdominal pain, gum inflammation and swelling

Urogenital: impotence, urination at night, frequent urination, sexual difficulties

Musculoskeletal: muscle pain, joint pain, muscle cramps

Central nervous system: headache, pins and needles, dizziness, tremor, difficulty walking

Endocrine: breast enlargement in men

Psychological: mood changes, poor memory, depression, hallucinations, sleeplessness, nervousness, personality changes

Blood: increase in numbers of eosinophils (type of white blood cell) usually denoting allergic reaction

Skin: rash, itching, nettle rash, sensitivity to light, severe allergic reactions, itching, reddening of the skin, erythema multiforme, bleeding into the skin, exfoliative dermatitis (severe skin condition characterised by fever, redness, itching and scaling of skin)

Special senses: visual disturbances, tinnitus, poor sight, eye irritation

Strength level: 3

Betablockers

These drugs – or beta-adrenoceptor blocking drugs, to give them their full name – interfere with receptors that are stimulated by adrenaline (epinephrine) and related substances. They, therefore, have an effect of slowing down the body, leading to tiredness, cold extremities and slow pulse. I have treated people taking betablockers who have been very severely affected, even to the point of causing confusion and dementia. They are powerful in their actions and, as they are frequently used for many years, the effect is cumulative. Their main adverse effects are on the heart, circulation, digestion and kidneys.

Generic name	Brand name	Dosage
acebutolol	Monitan, Rhotral, Sectral, Secadrex	Angina: 400–1,200 mg daily Palpitations: 400–1,200 mg daily Hypertension: 400–800 mg daily
atenolol	Beta-Adalat*, Amolin, Anselol, Antipressan, Atehexol, Atenix, Atenogen, Atenomel, Aterol, Co-tenidone*, Kalten*, Nif-Ten, Noten, Tenchlor*, Tenif*, Tenlol, Tenoret*, Tenoretic*, Tenormin, Tensig, Totamol, Totaretic*	50– 100 mg daily
betaxolol	Kerlone, Korlone	20–40 mg daily
bisoprolol	Bicor, Cardicor, Emscor, Monocor, Monozide 10*, Zebeta, Ziac	10–20 mg daily
celiprolol	Celiprolol, Celectol	200–400 mg daily
labetalol	Normodyne, Presolol, Trandate	100–800 mg daily
metoprolol	Betaloc, Betazok, Co-Betaloc*, Lopressor, Minax, Toprol XL	100–300 mg daily

nadolol	Corgard, Corgaretic	Hypertension: 80–240 mg daily Angina: 40–160 mg daily Palpitations: 40–160 mg daily Migraine prevention: 40–160 mg daily
oxprenolol	Apsolox, Corbeton, Trasicor, Trasidrex*	Hypertension: 80–160 mg daily Angina: 80–160 mg daily Palpitations: 40–240 mg daily Anxiety: 40–80 mg daily
propranolol	Angilol, Apsolol, Berkolol, Beta-Prograne, Cardinol, Deralin, Detensol, Inderal, Inderal-LA, Inderetic*, Inderex*, Inderide LA, Lorol, Novopropranol, Nolol, Prodorol, Pronol, Propanix, Tiperol	Palpitations: 30–160 mg daily Angina: 80–240 mg daily Hypertension: 160–320 mg daily Migraine prevention and anxiety: 80–160 mg daily
timolol	Betim, Blocadren, Cardol, Cosopt, Moducuren*, Prestim*	Hypertension: 10–60 mg daily (by mouth) Angina: 10–45 mg daily Heart attack: 10–20 mg daily Migraine prevention: 10–20 mg daily

Table 12.5: Betablockers

Uses: hypertension, post-heart attack, palpitations, migraine, hyperthyroidism, glaucoma (drops). Betablockers can also be given for anxiety and phobic attacks. I have known them to be given to children for school phobia.

When not to be used: abnormal heart rhythms, history of wheezing, after prolonged fasting and in patients with diabetes mellitus. Because these drugs block the adrenaline/epinephrine response, patients cannot detect when they become hypoglycaemic – a potentially fatal situation in a diabetic who takes insulin or hypoglycaemic drugs.

Cautions: heart failure can be brought on or worsened by these drugs. The dosage should be reduced if the heart rate is slow.

They must not to be stopped suddenly if there is ischaemic heart disease. What this means, in practice, is that, where these agents have been given for a prolonged period of time (over several months), they should always be reduced slowly, because sudden withdrawal could lead to a heart attack. Since people may have ischaemic heart disease to some degree, it seems sensible to reduce slowly even in people who have been prescribed this drug for migraine or anxiety.

Effects

General: tiredness

Cardiovascular: cold hands and feet, low blood pressure, palpitations, worsening of oedema, cramping pains in feet and legs on exercise, Raynaud's phenomenon, slow heart rate, low blood pressure that worsens with standing (sometimes leading to fainting), raised serum cholesterol levels

Respiratory: wheezing (this can be fatal in those with asthma or a history of asthma)

Gastrointestinal: diarrhoea, gastrointestinal disturbance, low blood sugar

Urogenital: impotence

Musculoskeletal: muscle weakness and fatigue (particularly after exercise), increase in ANA (antinuclear antibodies)

Central nervous system: dizziness, pins and needles in the hands

Psychological: sleep disturbances, nightmares, mood changes, confusion, hallucinations, psychoses

Blood: low platelet count leading to bleeding into the skin, prolonged bleeding after injury and spontaneous bruising

Skin: hair loss, psoriasis-like skin rash, worsening of psoriasis, bleeding into the skin

Special senses: visual disturbances, eye changes such as conjunctivitis and 'dry eye'

Strength level: 3

Angiotensin-converting enzyme (ACE) inhibitor

Generic name	Brand name	Dosage
captopril	Acepril, Capoten, Acezide*, Capozide*, Aceomel, Actopril	50–150 mg daily
cilazapril	Vasace	Hypertension: 2.5–5 mg daily Heart failure: 1–2.5 mg daily
enalapril	Innovace, Innozide*, Teczem, Vasotec	10–40 mg daily.
fosinopril	Staril	10–40 mg daily
lisinopril	Carace, Prinivil, Zestril, Zestoretic*	2.5–20 mg daily
moexipril	Perdix, Univasc	7.5–30 mg daily
perindopril	Coversyl	Hypertension: 2–4 mg daily
quinapril	Accupril, Accupro, Accuretic*	Hypertension: 20–40 mg daily Heart failure: 10–20 mg daily
ramipril	Altace, Tritace, Trialix	Hypertension: 2.5–10 mg daily Heart failure 5–10 mg daily
trandolapril	Gopten, Odrik	Hypertension: 500 mcg–2 mg daily Prevention after heart attack: 500 mcg–4 mg daily

Table 12.6: Angiotensin-converting enzyme (ACE) inhibitor

Uses: hypertension

When not to be used: allergic oedema, autoimmune disease affecting the blood vessels, those who take immunosuppressants, kidney impairment

Cautions: All patients must have kidney function tests before treatment. This must at least include urine examination with serum urea and creatinine levels.

All patients should be specifically told to report any sign of infection, such as sore throat and fever, so that a white blood cell count can be taken.

When the drug is given to patients with previous kidney disease, monthly urinary protein estimations by 'dip stick' should be performed for the first nine months of treatment.

Effects

General: serum sickness, tiredness, lymphatic gland enlargement, fever, malaise

Cardiovascular: low blood pressure, palpitations, rapid heart rate, vasculitis (inflammation of small blood vessels that may lead to skin rashes, arthritis, bruising of the skin and kidney failure)

Respiratory: swollen extremities, swelling of face, lips, mucous membranes, tongue, glottis or larynx, dry cough, wheezing, sinusitis, runny nose, sore throat

Gastrointestinal: loss of taste, weight loss, sore mouth, mouth ulcers, raised liver enzymes, liver damage, jaundice, indigestion, abdominal pain, pancreatitis, nausea, vomiting, diarrhoea, constipation, hepatitis

Urogenital: kidney impairment, protein in the urine, raised serum urea and creatinine, raised serum potassium levels

Musculoskeletal: positive antinuclear antibody test, joint swelling, joint pains, muscle pains

Central nervous system: dizziness, pins and needles of the hands, headache

Blood: low platelet count (type of white blood cell) leading to increased susceptibility to infection, anaemia, low platelet count leading to bleeding into the skin, prolonged bleeding after injury and spontaneous bruising, reduction in white blood cell count that may lead to increased infections, anaemia due to destruction of red blood cells, raised erythrocyte sedimentation rate, increase in numbers of eosinophils (type of white blood cell) usually denoting allergic reaction, increase in number of white blood cells

Skin: rash, itching, nettle rash, blistering rash (small or large), flushes, sensitivity to light

Strength level: 3

Angiotensin II receptor blockers

Generic name	Brand name	Dosage
irbesartan	Aprovel	150–300 mg daily
losartan	Cozaar	50–100 mg daily
valsartan	Diovan	80–160 mg daily

Table 12.7: Angiotensin II receptor blockers

Uses: hypertension

Effects

Cardiovascular: low blood pressure leading to fainting and light-headedness (if diuretics also used)

Respiratory: angioedema

Gastrointestinal: diarrhoea, raised liver enzymes

Urogenital: kidney impairment, kidney failure

Musculoskeletal: muscle pain

Central nervous system: dizziness, migraine

Skin: itching, nettle rash

Strength level: 3

Doxazosin and its relatives

Generic name	Brand name	Dosage
doxazosin	Cardura	Hypertension: 1 mg (starting dose), increased gradually as necessary up to 20 mg Enlarged prostate: 1–8 mg
indoramin	Baratol, Doralese	40–100 mg daily
prazosin	Alphavase, Hypovase	High blood pressure: 0.5 mg, increased as necessary to 20 mg daily Enlarged prostate: up to 4 mg daily
terazosin	Hytrin BPH	1–10 mg daily

Table 12.8: Doxazosin and its relatives

Uses: hypertension

Cautions: kidney and liver impairment

Effects

General: fatigue, malaise, weakness, sleepiness

Cardiovascular: oedema, palpitations, chest pain, angina pectoris, heart attack

Respiratory: runny nose

Gastrointestinal: nausea, raised liver enzymes

Urogenital: urinary incontinence

Central nervous system: dizziness, headache, postural dizziness, vertigo, stroke

Strength level: 3

Hydralazine

Generic name	Brand name	Dosage
hydralazine	Apresoline	Hypertension: 50–100 mg daily Heart failure: 75–300 mg daily

Table 12.9: Hydralazine

Uses: hypertension, heart failure

When not to be used: systemic lupus erythematosus and related diseases, rapid heart rate, heart failure due to mechanical obstruction or lung disease

Cautions: this drug may cause or worsen angina pectoris. Patients with coronary artery disease should only take this drug with a betablocker or similar. Use with caution in patients with coronary artery disease or cerebrovascular disease.

Prolonged treatment (i.e. more than six months) may cause a systemic lupus erythematosus-like syndrome. During long-term treatment, it is advisable to check antinuclear antibodies (blood test) and do urine analysis every six months.

The drug must be stopped in the event of skin rash, fevers and change in blood count.

This drug caused lung tumours in mice and liver and testicular tumours in rats.

Effects

General: flushing, fever, malaise, lymphatic gland enlargement

Cardiovascular: palpitations, symptoms of angina, rapid heart rate, low blood pressure, oedema, heart failure, vasculitis (inflammation of small blood vessels that may lead to skin rashes, arthritis, bruising of the skin and kidney failure)

Respiratory: blocked nose, breathlessness, pleural pain

Gastrointestinal: gastrointestinal disturbances, diarrhoea, nausea, vomiting, jaundice, enlarged liver, raised liver enzymes, hepatitis, paralytic ileus, poor appetite, loss of weight

Urogenital: proteinuria, raised serum creatinine levels, glomerulonephritis, kidney failure, retention of urine, blood in urine

Musculoskeletal: joint pain, joint swelling, muscle pain, systemic lupus erythematosus-like syndrome

Central nervous system: headache, dizziness, peripheral neuritis, polyneuritis, pins and needles

Psychological: agitation, depression, hallucinations, anxiety

Blood: anaemia, reduction in white blood cell count that may lead to increased infections, low platelet count (type of white blood cell) leading to increased susceptibility to infection, low platelet count leading to bleeding into the skin, prolonged bleeding after injury and spontaneous bruising, anaemia due to destruction of red blood cells, increase in number of white blood cells, reduction in numbers of red and white blood cells and platelets leading to anaemia, increased risk of infection and spontaneous bruising/bleeding, enlarged spleen, severe acute reduction in numbers of neutrophils (type of white blood cell) leading to severe bacterial infections that are usually fatal, increase in numbers of eosinophils (type of white blood cell) usually denoting allergic reaction

Skin: rash, itching, nettle rash, bleeding into the skin

Special senses: watering of the eyes, conjunctivitis, exophthalmos

Strength level: 3

Minoxidil

Generic name	Brand name	Dosage
minoxidil	Loniten	5 mg daily (maximum 50 mg daily)

Table 12.10: Minoxidil

Uses: severe hypertension

When not to be used: pheochromocytoma. Minoxidil should not be used in the period immediately after a heart attack.

Cautions: can cause marked water retention leading to oedema and worsening of heart failure. It must always be given with diuretics and a restricted salt diet.

Hair growth occurs in most patients and all patients should be warned of this before treatment. Hair growth returns to normal within 1–3 months after treatment has ended.

Pericardial effusion is occasionally seen and so all patients should be periodically monitored for this.

Effects

Cardiovascular: oedema, palpitations

Gastrointestinal: weight gain, gastrointestinal intolerance

Urogenital: raised serum creatinine and serum urea levels

Women's health: breast tenderness

Skin: rash, hair growth

Strength level: 3

Diuretics

Diuretics remove water from the body and so mainly affect the kidneys. Potassium is lost along with the water, so potassium deficiency is not uncommon and is probably more widespread than generally realised. Potassium loss is more obvious with the more powerful drugs and potassium supplements are usually given with high-potency diuretics.

Low-potency diuretics

Generic name	Brand name	Dosage
amiloride	Amilospare, Berkamil, Midamor, Co-amilofruse*, Co-amilozide*, Burinex A*, Frumil*, Moduretic*, Buram, Moduret, Lasoride, Moducren, Navispare	5–20 mg daily
spironolactone	Aldactone, Laractone, Spiroctan, Spirolone, Spirospare, Aldactide*, Lasilactone*, Spiro-Co*	50–400 mg daily
triamterene	Dytac, Dyazide*, Dytide*, Frusene*, Kalspare*, Triam-Co*, TriamaxCo*	50–250 mg daily

Table 12.11: Low-potency diuretics

Amiloride

Uses: hypertension, heart failure, cirrhosis of the liver, nephrotic syndrome, premenstrual syndrome, glaucoma, Ménière's disease

When not to be used: those who take potassium supplements, kidney failure, severe progressive kidney disease, kidney disease due to diabetes mellitus

Cautions: kidney function tests must be carried out before treatment begins in diabetic patients.

Serum potassium levels should be checked regularly, as potassium is retained with this medication. High potassium levels lead to tiredness, confusion, muscle weakness, irregular slow pulse and, eventually, cardiac arrest.

Effects

Cardiovascular: low blood pressure when standing, raised serum potassium levels

Gastrointestinal: gastrointestinal disturbances, dry mouth

Psychological: confusion

Skin: rash

Strength level: 2 or 5, depending on the situation

Spirolactone

Uses: heart failure, liver cirrhosis, nephrotic syndrome, hypertension, ascites due to cancer

When not to be used: as amiloride (above)

Cautions: as amiloride (above)

Effects

General: drowsiness, lethargy, fever

Gastrointestinal: gastrointestinal intolerance

Urogenital: impotence

Central nervous system: headache, loss of balance

Endocrine: breast enlargement in men, breast soreness, masculinisation

Women's health: menstrual irregularities

Psychological: mental confusion

Strength level: 2 or 5, depending on the situation

Triamterene

Uses: oedema, hypertension

When not to be used: kidney failure

Cautions: kidney and liver impairment, gout or tendency to gout, with drugs that lower blood pressure. There should be regular monitoring of serum urea, sodium and potassium levels.

Effects

Cardiovascular: decrease in blood pressure, raised serum potassium levels

Gastrointestinal: gastrointestinal disturbances, dry mouth

Urogenital: kidney stones

Blood: blood disorders

Skin: rash, sensitivity to light

Strength level: 2 or 5, depending on the situation

Medium-potency diuretics

Generic name	Brand name	Dosage
bendrofluazide (bendroflumethiazide)	Aprinox, Berkozide, Neo-NaClex, Corgaretic*, Inderetic*, Inderex*, Neo-Bendromax*, Neo-NaClex- K*, Prestim*, Centyl	2.5–10 mg daily
chlorthalidone (chlortalidone)	Hygroton Tenoret*	Oedema: up to 50 mg daily Hypertension: 25–50 mg daily Heart failure: 25–200 mg daily 1 tablet daily
cyclopentiazide	Navidrex, Navispare*, Trasidrex*	0.25–1.5 mg daily
hydrochlorothiazide	Accuretic, Acezide*, Capozide*, Capozide*, Carace, Co-Betaloc*, Co-Diovan, Cozaar Comp, Dyazide*, Esidrex, HydroSaluric, Innozide* , Moducren*, Moduretic*, Zestoretic	25–200 mg daily.
hydroflumethiazide	Aldactide*	Up to 200 mg daily
indapamide	Agelan, Natrilix, Natrilix SR	2.5 mg daily
mefruside	Baycaron*	25 mg daily
metolazone	Metenix 5	Oedema: 5–20 mg daily Hypertension: 5 mg daily
polythiazide	Nephрил	1–4 mg daily
xipamide	Diurexan	20 mg daily

Table 12.12: Medium-potency diuretics

Uses: oedema, hypertension

When not to be used: low serum potassium levels, precoma associated with liver cirrhosis or Addison’s disease. Not to be given to anyone taking lithium.

Cautions: caution in the elderly. Regular supervision is required with monitoring of fluid and electrolyte state to avoid excessive changes to serum potassium levels or fluid balance. In treated diabetics, a change in dosage of hypoglycaemic agents may be necessary, as these drugs raise blood sugar levels.

Effects

General: fatigue

Cardiovascular: vasculitis (severe inflammation of small blood vessels that may lead to skin rashes, arthritis, bruising of the skin and kidney failure)

Gastrointestinal: thirst, dry mouth, gastrointestinal upset, pancreatitis

Urogenital: scanty urination

Musculoskeletal: muscle pain, gout

Central nervous system: dizziness, headache

Blood: blood disorders

Skin: rash, sensitivity to light

Special senses: short-sightedness

Strength level: 2 or 5, depending on the situation

High-potency diuretics

Generic name	Brand name	Dosage
bumetanide	Burinex, Burinex K	0.5–5mg daily
co-amilofruse	Co-amilofruse	1 daily
ethacrynic acid (etacrynic acid)	Edecrin	0.5–1 mg/kg of body weight
frusemide (furosemide)	Dryptal, Froop, Lasix, Rusyde, Aridel*, Co-amilofruse*, Diumide-K Continus*, Fru-Co*, Frumil*, Lasikal*, Lasoride, Aluzine, Frumax, Frusid	20–80 mg daily or alternate days
piretanide	Trialix*	1 tablet daily
torsemede	Demedex	10–20 mg daily

Table 12.13: High-potency diuretics

Frusemide (furosemide)

Uses: hypertension, heart failure, cirrhosis of the liver, nephrotic syndrome, premenstrual syndrome, glaucoma, Meniere's disease

When not to be used: where there is no urination, severe liver disease, sensitivity to sulphonamides

Cautions: liver and kidney impairment, gout, diabetes mellitus, enlarged prostate. Potassium supplements are often needed.

Effects

General: lethargy, malaise, drowsiness, fever

Cardiovascular: low blood pressure (particularly when standing), fainting

Gastrointestinal: nausea, vomiting, gastric upset, diarrhoea, jaundice

Urogenital: excess urination, dehydration

Musculoskeletal: muscle cramps, attacks of gout, raised uric acid levels

Central nervous system: dizziness, vertigo

Endocrine: raised blood sugar

Psychological: poor concentration

Blood: severe acute reduction in numbers of neutrophils (type of white blood cell) leading to severe bacterial infections that are usually fatal, low platelet count leading to bleeding into the skin, prolonged bleeding after injury and spontaneous bruising, anaemia

Skin: rash, sensitivity to light

Special senses: tinnitus, deafness, visual disturbances

Strength level: 2 or 5, depending on the situation

Holistic management of hypertension

The majority of people with hypertension can be treated holistically and are usually able to reduce or even stop their medication. Blood pressure is only one factor to be taken into account by holistic practitioners in diagnosis and treatment. It is helpful not to be over-concerned with a particular set of blood pressure readings. The overall picture is the important one. Levels of blood pressure have to be high for a long time before there is any need for concern about ‘strokes’ and cardiac conditions.

As usual, always wait for an improvement from the holistic treatment before the patient begins to reduce the dosage of drugs. A rebound rise in blood pressure readings may be seen whenever the dose is lessened. In some cases, the patient may also experience symptoms such as light-headedness, dizziness and headache. This is why reduction must be slow and gentle. Patients soon start to feel better, partly as a result of the treatment and partly as the drug effects lessen with the reduced dose.

Begin with the most powerful drug first. Hypotensive drugs should be dealt with initially, but do not stop them suddenly, as heart problems may occur.

Once the hypotensive drug has been stopped, move on to the diuretic. Even when the drugs are withdrawn and the patient’s level of health has improved, there may still be occasional flare-ups, often resulting from stressful events at home or at work. It is not necessary for the patient to resort to drugs on these occasions. Relaxation, massage and specific treatment can all be used to help. As stated above, a short-term mildly elevated blood pressure is not going to kill people and it is possible to deal with such situations in other ways.

Regarding diuretics, it is important to determine the original condition for which they were prescribed. There is a great difference in how heart failure or simple oedema before the menstrual period are managed. The higher-potency diuretics tend to be used in more severe disease.

A reduction in diuretic dosage tends to lead to the reappearance of oedema and changes in urination patterns. It may be possible for patients to take the diuretic on a symptomatic basis for a while (e.g. every 2–3 days, as necessary). This is more likely to be possible in mild cases rather than in cases of cardiac failure. More care must be taken with severe disease, since any increase in oedema is accompanied by more severe symptoms (e.g. breathlessness, severe oedema).

I treated a man with myalgic encephalomyelitis (ME) who was prescribed Centyl for swelling in his legs. This was purely to relieve symptoms and did nothing to address any underlying disease. As he improved with acupuncture and Chinese herbal treatment, he was able to reduce the dosage of his diuretic. He took his medication on alternate days. Subsequently, he reduced the dosage to 1 tablet every 3 days. As treatment progressed, he gradually lengthened the period of time between taking tablets and, eventually, he only took a Centyl tablet when he felt he needed it.

Case history

A woman aged 66 had high blood pressure for many years and had been on medication for three years. She came for treatment because she wished to control her blood pressure with less medication. Her blood pressure was currently 180/110 on medication.

She had had her last period 11 years previously and was given female hormone replacement treatment (HRT) the year after. Her sleep was generally disturbed and she woke at 2 a.m. to pass urine. She often stayed awake for an hour or so and, as she tended to be a worrier, she could lie awake worrying about things that were on her mind.

Medication

Premarin: 2.5 mg daily

Provera: 0.325 mg daily

Atecor: 50 mg daily

Centyl: 2.5 mg daily

Pulse: Kid Yin thready, Liv floating

Tongue: generally good colour. Some red prickles at the front.

Diagnosis: Kidney Yin Deficiency, Liver Yang Rising

Treatment principles: nourish Kidney Yin, subdue Liver Yang

It is important to determine what medication people are taking and why they are taking it. An analysis of this patient's prescribed drugs follows.

Drug	Type	Uses	Strength level
Premarin	Oestrogen	Female hormone replacement therapy (HRT)	2
Provera	Progesterone	Female hormone replacement therapy (HRT)	2
Atecor	Betablocker	Hypertension	3
Centyl	Low-potency diuretic	Hypertension	2

The key to this case is the use of medication that increases blood pressure (Premarin and Provera). If these are stopped, she may find that her blood pressure will normalise or at least moderate to more normal levels. In this case, therefore, it is preferable to begin with a reduction in her HRT before moving on to the other drugs. This woman came to the first consultation clearly stating that she wanted to come off her medication. This makes the practitioner's work much easier. The situation is more difficult when a patient merely comes for relief of high blood pressure and yet does not want to reduce HRT medication.

I treated her with acupuncture and Chinese herbal medicine.

Acupuncture

LIV-3 Taichong, **K-3** Taixi, **Ren-4** Guanyuan, **SJ-6** Zhigou, **SP-3** Taibai

Chinese herbal medicine

Shu Di Huang *Radix Rehmanniae Glutinosae Conquिताe* 15 g

Shan Yao *Radix Dioscoreae Oppositae* 9 g

Shan Zhu Yu *Fructus Corni Officinalis* 9 g

Gou Qi Zi *Fructus Lycii Chinensis* 9 g

Niu Xi *Radix Achyranthis Bidentatae* 6 g

Tu Si Zi *Semen Cuscutae* 9 g

Lu Jiao Shuang *Cornu Cervi Degelatinatum* 6 g

Gui Ban *Plastrum Testudinis* 9 g

At her second visit, one month later, she had loose stools, twice every morning. Her herbs had finished and she was feeling better, with an increased appetite. Her energy was good and her blood pressure was 140/90.

I changed her herbal formula slightly to:

Shu Di Huang *Radix Rehmanniae Glutinosae Conquिताe* 24 g

Shan Yao *Radix Dioscoreae Oppositae* 15 g

Shan Zhu Yu *Fructus Corni Officinalis* 12 g

Mu Dan Pi *Cortex Moutan Radicis* 3 g

Fu Ling *Sclerotium Poriae Cocos* 10 g

Ze Xie *Rhizoma Alismatis Plantago-aquaticae* 3 g

Rou Gui *Cortex Cinnamomi Cassiae* 3 g

She reduced the Provera to half a daily dose.

Outcome

At visit three, one month later, her sleep had improved. She was urinating less at night and was also feeling generally calmer at night. Her blood pressure was 135/90. Her HRT medication was then reduced to:

Provera 2.5 mg daily and Premarin 0.325 mg on alternate days

At visit four, one month later, she was well. She had stopped the HRT completely the day before coming for treatment. She decided that she did not need it any more. She felt fine, with just a slight headache. She only urinated once at night now. Her energy was good and her bowels normal. Her blood pressure was 140/85.

At visit five, one month later, she was feeling very good. She would have an occasional hot flush only, with no other withdrawal symptoms from the HRT. Her mood was good. She had some dull headaches on her right temple, around the eye. These would come on when she was stressed and make her tired. Her blood pressure was 140/85. She reduced her Atecor to every second day.

On her sixth visit, two months later, she felt well. She had reduced her Atecor again because she felt so well and had now been taking no medication for the previous three weeks. She felt the best she had done for years. Her blood pressure was 160/90, which was a slight increase, but, with regular treatment and monitoring, she will be fine. This would be of more concern if her blood pressure had risen by say 20 or more points and she also had symptoms of pounding headache, red face, dizziness, red eyes or blurred vision. Her treatment continues.