

# Cardiovascular Problems

*One in a series of curriculum statements produced by the Royal College of General Practitioners:*

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# Acknowledgements

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This curriculum statement is based on the cardiovascular research expertise of members of the Department of Primary Care and General Practice at the University of Birmingham.

It has drawn on various national guidelines and policies, current research evidence and the clinical experience of practising general practitioners.

The Royal College of General Practitioners would like to express its thanks to these individuals.

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*Created:* December 2004

*Date of this update:* February 2009

*Version number:* 1.1

*Previous versions:* 1.0 issued January 2006, corrected and re-issued February 2007

## Key messages

- Cardiovascular problems are an important cause of morbidity and mortality.
- Management of the risk factors for cardiovascular problems is an essential part of health promotion activity in primary care.
- All general practitioners should be competent in the management of cardiovascular emergencies in primary care.
- Accurate diagnosis of symptoms that may potentially be due to cardiovascular causes is a key competence for general practice.

# Introduction

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Cardiovascular problems includes coronary heart disease (angina, acute coronary syndromes, cardiac arrest), heart failure, arrhythmias, other heart disease (valve disease, cardiomyopathy, congenital), peripheral vascular disease (arterial and venous), cerebrovascular disease (stroke and transient ischaemic attack [TIA]) and thromboembolic disease.

This statement relates to the management of these problems and the risk factors leading to them.

## Rationale for this curriculum statement

Cardiovascular problems are important because they are common, causing high levels of morbidity and mortality, resulting in considerable costs to society:

- Coronary heart disease (CHD) is the greatest burden in terms of mortality worldwide<sup>1</sup>
- 50% of 45-year-olds will die subsequently from coronary heart disease in the UK<sup>2</sup>
- Stroke is the commonest form of acquired disability
- Estimated direct health costs of cardiovascular problems are huge: £15 billion (2003 costs)<sup>2</sup>
- Primary and secondary prevention aimed at reducing risk factors (blood pressure, cholesterol, smoking, aspirin, better diabetic control) leads to clinically and statistically significant reductions in morbidity and mortality<sup>3</sup>
- Consulting rates for cardiovascular disease are increasing with an ageing population and account for at least 931 per 10,000 person years at risk<sup>4</sup>
- Current evidence is that management of cardiovascular disease and its risk factors is often suboptimal.<sup>5</sup>

## UK health priorities

### National Service Framework for Coronary Heart Disease (CHD)

This sets out twelve standards covering the detection and management of risk factors for CHD and established CHD. Separate standards cover the emergency treatment of CHD and rehabilitation of people with CHD.

### National Service Framework for Older People

The NSF for Older People sets out a single standard for stroke that covers the appropriate detection and management of people at risk of and suffering from stroke as well as rehabilitation and secondary prevention.

### General Medical Services 2 contract

The 2003 GMS contract includes seven relevant clinical domains in the Quality and Outcomes Framework. Of these, four cover CHD, stroke, atrial fibrillation and left ventricular dysfunction, with a further three domains involving the key cardiovascular risk factors of diabetes, CKD and hypertension. Additional relevant domains are regular monitoring of smoking status and blood pressure in the practice population.

## Relevant NICE guidelines

NICE guidance is available for the management of stroke, post-myocardial infarction, atrial fibrillation, diabetes, hypertension, lipid lowering, anti-platelet therapy and heart failure.

# Learning Outcomes

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The following learning objectives describe the knowledge, skills and attitudes that a general practitioner (GP) requires when managing patients with cardiovascular problems. This curriculum statement should be read in conjunction with the other RCGP curriculum statements in the series. The full range of generic competences is described in the *core* RCGP curriculum statement 1, *Being a General Practitioner*.

## Primary care management

- Manage primary contact with patients who have a cardiovascular problem.
- Coordinate care with other primary care health professionals, cardiologists and other appropriate specialists, leading to effective and appropriate acute and chronic disease management including prevention, rehabilitation and palliative care for those with end stage cardiac failure.
- Make timely appropriate referrals on behalf of patients to specialist services, especially to rapid-access chest pain, stroke/TIA and heart failure clinics.
- Promote cardiovascular wellbeing by applying health promotion and disease prevention strategies appropriately.
- Describe strategies for early detection of cardiovascular problems that may already be present but have not yet produced symptoms.

## The knowledge base

### Symptoms:

Key issues in the diagnosis of cardiovascular problems will be the eliciting of the appropriate signs and symptoms, and subsequent investigation and/or referral of people presenting with:

- Chest pain (cardiac causes, e.g. ischaemic heart disease, pericarditis and aortic dissection, *versus* non-cardiac causes, e.g. chest wall/musculoskeletal, psychological, respiratory, gastrointestinal)
- Breathlessness (heart failure, respiratory problems, thromboembolism, anaemia, obesity, malignancy)
- Ankle swelling (heart failure, thromboembolism, venous stasis, varicose veins, deep vein thrombosis (DVT), leg ulcers, lymphoedema, anaemia, obesity, malignancy, hypoproteinaemia)
- Symptoms or signs thought to be due to peripheral vascular disease (arterial and venous)
- Palpitations and silent arrhythmias
- Signs and symptoms of cerebrovascular disease
- Collapse.

### Common and/or important conditions:

- Coronary heart disease (angina, acute coronary syndromes, cardiac arrest)

- Heart failure
- Arrhythmias (ectopic beats, atrial fibrillation and flutter, narrow and broad complex tachycardias, bradyarrhythmias)
- Other heart disease (valve disease, cardiomyopathy, congenital)
- Peripheral vascular disease (arterial and venous)
- Cerebrovascular disease (stroke and TIA)
- Thromboembolic disease.

#### **Investigations:**

- Blood pressure measurement
- Electrocardiogram (12-lead ECG)
- 24-hour ambulatory blood pressure measurement
- Venous dopplers and ankle brachial pressure index (ABPI) measurement
- Knowledge of secondary care investigations and treatment including echocardiography, 24-hour arrhythmia monitoring, venography, CT/MRI, carotid doppler examination, invasive procedures such as angioplasty, coronary artery bypass grafting.

#### **Treatment:**

- Treatment of people at risk from cardiovascular problems including specific management of raised blood pressure and lipids
- Chronic disease management including specific disease management, systems of care, multidisciplinary teamwork for people with established cardiovascular problems, rehabilitation and also palliative care for those with end stage cardiac failure
- Communication with patients and their families and interprofessional communication both within the primary health care trust (PHCT) and between primary and secondary care.

#### **Emergency care:**

- Acute treatment of people presenting with cardiovascular problems or symptoms thought to be due to cardiovascular problems.

#### **Prevention:**

This will involve the following risk factors:

- Blood pressure
- Lipids
- Smoking
- Other modifiable risk factors (including alcohol, exercise, obesity and diet)
- Fixed factors: age, ethnicity, sex and family history
- Co-morbidities especially diabetes (*see also the Metabolic Problems curriculum statement*)
- Combining risk factors – risk calculation and communicating risk.

#### **Person-centred care**

- Identify the patient's health beliefs regarding cardiovascular problems and either reinforce, modify or challenge these beliefs as appropriate.

- Recognise that non-concordance is common for many preventative cardiovascular medicines and respect the patient's autonomy when negotiating management.
- Communicate the patient's risk of cardiovascular problems clearly and effectively in a non-biased manner.
- Utilise disease registers and data-recording templates effectively for opportunistic and planned monitoring of cardiovascular problems to ensure continuity of care between different healthcare providers.

### Specific problem-solving skills

- Intervene urgently when patients present with a cardiovascular emergency, e.g. myocardial infarction, stroke and critical ischaemia.
- Demonstrate an understanding of the importance of risk factors in the diagnosis and management of cardiovascular problems.
- Demonstrate a reasoned approach to the diagnosis of cardiovascular symptoms (e.g. chest pain – see above) using history, examination, incremental investigations and referral.

### A comprehensive approach

- Prioritise interventions for multiple risk factors and symptoms of cardiovascular problems according to their severity and prognostic risk.
- Advise patients appropriately regarding lifestyle interventions according to their cardiovascular risk and level of disability.

### Community orientation

- Describe the rationale for restricting certain investigations and treatments in the management of cardiovascular problems, e.g. open-access echocardiography, statin prescribing.
- Advise patients appropriately regarding driving according to their cardiovascular risk and DVLA guidelines.

### A holistic approach

- Appreciate the importance of the social and psychological impact of cardiovascular problems on the patient.
- Appreciate the importance of the social and psychological impact of cardiovascular problems on the patient's family, friends, dependants and employers.
- Recognise the impact cardiovascular problems have on disability and fitness to work.
- Recognise the cultural significance that people attach to the heart as a seat of emotions.

### Contextual aspects

- Describe current population trends in the prevalence of risk factors and cardiovascular disease in the community.
- Describe the key government policy documents that influence healthcare provision for cardiovascular problems.
- Describe how geographical distance influences the treatment of cardiovascular emergencies.

### Attitudinal aspects

- Ensure that personal opinions regarding risk factors for cardiovascular problems (e.g. smoking, obesity, exercise, alcohol, age, race) do not influence management decisions.

### Scientific aspects

- Describe and be able to implement the key national guidelines that influence healthcare provision for cardiovascular problems.

- Describe the key research findings that influence management of cardiovascular problems (e.g. heart protection study).

## **Psychomotor skills**

- Clinical skills including cardiovascular examination and blood pressure measurement.
- Calculation of cardiovascular risk.
- Performing an ECG and basic interpretation.
- Resuscitation for children and adults.

# Further Reading

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## Examples of relevant texts and resources

BEEVERS G, LIP GHY, O'BRIEN E. *ABC of Hypertension (5th edn)* London: BMJ Books, 2006

BRITISH MEDICAL ASSOCIATION AND ROYAL PHARMACEUTICAL SOCIETY OF GREAT BRITAIN. *The British National Formulary* London: BMJ Books, updated annually

BRITISH MEDICAL ASSOCIATION, ROYAL PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, ROYAL COLLEGE OF PAEDIATRICS AND CHILD HEALTH. *The Neonatal and Paediatric Pharmacists Group BNF for Children* London: BMA, 2005

CHAMBERS R, WAKELY G, IQBAL Z. *Cardiovascular Disease Matters* Oxford: Radcliffe Medical Press, 2001

HAMPTON JR. *The ECG Made Easy (6th edn)* London: Churchill Livingstone, 2003

IQBAL Z, CHAMBERS R, WOODMANSEY P. *Implementing the National Service Framework for Coronary Heart Disease in Primary Care* Oxford: Radcliffe Medical Press, 2001

JONES R, BRITTEN N, CULPEPPER L, *et al.* (eds). *Oxford Textbook of Primary Medical Care* Oxford: Oxford University Press, 2004

JULIAN DG, COWEN JC, MCLENACHAN J. *Cardiology (7th edn)* London: Saunders, 1998

LIP GHY, DAVIES R, DAVIES MK. *ABC of Heart Failure (2nd edn)* London: BMJ Books, 2006

WAINE C. *Coronary Heart Disease* London: RCGP, 1996

WARRELL D, COX TM, FIRTH JD, BENZ EJ (eds). *Oxford Textbook of Medicine (4th edn)* Oxford: Oxford University Press, 2004

## Web resources

### British Cardiac Society

[www.bcs.com/](http://www.bcs.com/)

### Chronic Disease Management Paper from RCGP

[www.rcgp.org.uk/PDF/Corp\\_chronic\\_disease\\_nhs.pdf](http://www.rcgp.org.uk/PDF/Corp_chronic_disease_nhs.pdf)

### National Library for Health

[www.library.nhs.uk](http://www.library.nhs.uk)

### NICE

[www.nice.org.uk](http://www.nice.org.uk) (for copies of guidelines)

### Personal experiences of illness and health (multimedia)

[www.dipex.org/](http://www.dipex.org/)

### Primary Care Cardiovascular Society

[www.pccs.org.uk/](http://www.pccs.org.uk/)

## Interesting papers

### Risk factors for CHD

- BAKER S, PRIEST P, JACKSON R. Using thresholds based on risk of cardiovascular disease to target treatment for hypertension: modelling events averted and number treated *BMJ* 2000; 320(7236): 680–5. Erratum in: *BMJ* 2000; 320(7247): 1436
- BECKETT NS, PETERS R, FLETCHER AE, *et al.* Treatment of hypertension in patients 80 years of age or older *N Engl J Med* 2008; 358: 1887–98
- Blood Pressure Lowering Treatment Trialists' Collaboration, Turnbull F, Neal B, Pfeffer M, *et al.* Blood pressure-dependent and independent effects of agents that inhibit the renin-angiotensin system. *J Hypertens* 2007; 25(5): 951–8. Erratum in: *J Hypertens* 2007; 25(7): 1524
- CAPPUCCIO FP, OAKESHOTT P, STRAZZULLO P, *et al.* Application of Framingham risk estimates to ethnic minorities in United Kingdom and implications for primary prevention of heart disease in general practice: cross sectional population based study *BMJ* 2002; 325(7375): 1271. Erratum in: *BMJ* 2003; 327(7420): 919
- LEWIS DK, ROBINSON J, WILKINSON E. Factors involved in deciding to start preventive treatment: qualitative study of clinicians' and lay people's attitudes *BMJ* 2003; 327(7419): 841
- LONN EM AND YUSUF S. Evidence based cardiology: emerging approaches in preventing cardiovascular disease *BMJ* 1999; 318(7194): 1337–41
- ROBLESS P, MIKHAILIDIS DP, STANSBY G. Systematic review of antiplatelet therapy for the prevention of myocardial infarction, stroke or vascular death in patients with peripheral vascular disease *Br J Surg* 2001; 88(6): 787–800
- WILSON S, JOHNSTON A, ROBSON J, *et al.* Comparison of methods to identify individuals at increased risk of coronary disease from the general population *BMJ* 2003; 326: 1436–40

### Angina

- CREA F AND LANZA GA. Angina pectoris and normal coronary arteries: cardiac syndrome X *Heart* 2004; 90(4): 457–63
- LÜSCHER TF. Treatment of stable angina *BMJ* 2000; 321: 62–3
- O'TOOLE L AND GRECH ED. Chronic stable angina: treatment options *BMJ* 2003; 326: 1185–8
- RIHAL CS, RACO DL, GERSH BJ, *et al.* Indications for coronary artery bypass surgery and percutaneous coronary intervention in chronic stable angina: review of the evidence and methodological considerations *Circulation* 2003; 108(20): 2439–45
- TRAN H AND ANAND SS. Oral antiplatelet therapy in cerebrovascular disease, coronary artery disease and peripheral arterial disease *JAMA* 2004; 292(15): 1867–74

### CHD – specialised topics

- BASS C AND MAYOU R. Chest pain (ABC of Psychological Medicine) *BMJ* 2002; 325(7364): 588–91
- BECKMAN JA, CREAGER MA, LIBBY P. Diabetes and atherosclerosis: epidemiology, pathophysiology, and management *JAMA* 2002; 287(19): 2570–81
- CHATURVEDI N. Ethnic differences in cardiovascular disease *Heart* 2003; 89(6): 681–6
- NABEL EG. Cardiovascular disease (Genomic Medicine) *N Engl J Med* 2003; 349(1): 60–72

### CHD – economics of treatment

- MARSHALL T AND ROUSE A. Resource implications and health benefits of primary prevention strategies for cardiovascular disease in people aged 30 to 74: mathematical modelling study *BMJ* 2002; 325(7357): 197. Erratum in: *BMJ* 2002; 325(7367): 756
- OFMAN JJ, BADAMGARAV E, HENNING JM, *et al.* Does disease management improve clinical and economic outcomes in patients with chronic diseases? A systematic review *Am J Med* 2004; 117(3): 182–92

### Acute coronary syndrome

- MAYNARD SJ, SCOTT GO, RIDDELL JW, *et al.* Regular review: management of acute coronary syndromes *BMJ* 2000; 321: 220–3
- ROE MT, OHMAN EM, POLLACK CV JR, *et al.* Changing the model of care for patients with acute coronary syndromes *Am Heart J* 2003; 146(4): 605–12

### Heart failure

- AURIGEMMA GP AND GAASCH WH. Clinical practice. Diastolic heart failure *N Engl J Med* 2004; 351(11): 1097–105
- DEI CAS L, METRA M, NODARI S, *et al.* Prevention and management of chronic heart failure in patients at risk *Am J Cardiol* 2003; 91(9A): 10–17F
- MCALISTER FA, STEWART S, FERRUA S, *et al.* Multidisciplinary strategies for the management of heart failure patients at high risk for admission: a systematic review of randomized trials *J Am Coll Cardiol* 2004; 44(4): 810–19
- RODEHEFFER RJ. Measuring plasma B-type natriuretic peptide in heart failure: good to go in 2004? *J Am Coll Cardiol* 2004; 44(4): 740–9

## Heart disease statistics

The best source of these can be downloaded as both PDF and Excel spreadsheet from the British Heart Foundation 'Heart Stats' website: [www.heartstats.org/homepage.asp](http://www.heartstats.org/homepage.asp).

## The patient's perspective

MCALISTER FA, O'CONNOR AM, WELLS G, *et al.* When should hypertension be treated? The different perspectives of Canadian family physicians and patients *CMAJ* 2000; 163(4): 403–8

PATTENDEN J, WATT I, LEWIN RJP, *et al.* Decision making processes in people with symptoms of acute myocardial infarction: qualitative study *BMJ* 2002; 324: 1006

## Cardiac rehabilitation

SMART N AND MARWICK TH. Exercise training for patients with heart failure: a systematic review of factors that improve mortality and morbidity *Am J Med* 2004; 116(10): 693–706

TAYLOR RS, BROWN A, EBRAHIM S, *et al.* Exercise-based rehabilitation for patients with coronary heart disease: systematic review and meta-analysis of randomized controlled trials *Am J Med* 2004; 116(10): 682–92

## Self-management

PARATI G, STERGIU G, ASMAR R, *et al.* European Society of Hypertension guidelines for blood pressure monitoring at home: a summary report of the Second International Consensus Conference on Home Blood Pressure Monitoring. *J Hypertens* 2008; 26: 1505–26.

WARSI A, WANG PS, LAVALLEY MP, *et al.* Self-management education programs in chronic disease: a systematic review and methodological critique of the literature *Arch Intern Med* 2004; 164(15): 1641–9

## Stroke

JOHNSTON SC, ROTHWELL PM, NGUYEN-HUYNH MN, *et al.* Validation and refinement of scores to predict very early stroke risk after transient ischaemic attack *Lancet* 2007; 369(9558): 283–92

MANT J, MCMANUS RJ, HARE R. Applicability to primary care of national clinical guidelines on blood pressure lowering for people with stroke: cross sectional study *BMJ* 2006; 332: 635–7

PROSPECTIVE STUDIES COLLABORATION, LEWINGTON S, WHITLOCK G, CLARKE R, *et al.* Blood cholesterol and vascular mortality by age, sex, and blood pressure: a meta-analysis of individual data from 61 prospective studies with 55,000 vascular deaths *Lancet* 2007; 370(9602): 1829–39

ROTHWELL PM, GILES MF, CHANDRATHEVA A, *et al.* Effect of urgent treatment of transient ischaemic attack and minor stroke on early recurrent stroke (EXPRESS study): a prospective population-based sequential comparison *Lancet* 2007; 370(9596): 1432–42.

## Venous thromboembolism

TOVEY C AND WYATT S. Diagnosis, investigation, and management of deep vein thrombosis *BMJ* 2003; 326(7400): 1180–4

MCMANUS RJ AND FITZMAURICE DA. *Thromboembolism in Clinical Evidence* London: BMJ Publications, 2008

## Peripheral vascular disease

BURNS P, GOUGH S, BRADBURY AW. Management of peripheral arterial disease in primary care *BMJ* 2003; 326(7389): 584–8

# Promoting Learning about Cardiovascular Problems

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## Work-based learning – in primary care

Primary care is a good place to learn how to manage cardiovascular problems because of the wealth of clinical material presenting. Patients will present various symptoms, at varying stages of the natural history. Critical, professional discourse with a trainer will aid the specialty registrars (GP) in developing heuristics to aid problem-solving. Supervised practice will engender confidence.

In particular, the specialty registrar (GP) should be able to learn about risk factor management and gain experience in the management of cardiovascular problems as they present (acute and chronic) including emergencies. Primary care is also the best place to learn about chronic disease management (angina, post-myocardial infarction (MI), heart failure, stroke, peripheral vascular disease).

## Non-work-based learning

Many postgraduate deaneries provide courses on cardiovascular problems. Other providers include universities and the Royal College of General Practitioners.

## Work-based learning - in secondary care

Some GP training programmes will contain placements of varying length with cardiologists. The acute setting is the place to learn about the acute management of acute coronary syndrome (ACS), MI, stroke and aortic aneurysms. The specialty registrar will also learn about the invasive management of cardiovascular problems: angioplasty, coronary artery bypass grafts, transplantation, other forms of vascular surgery (carotid endarterectomy, vascular bypass). Outpatient or clinic settings are ideal places for seeing concentrated groups of patients with cardiovascular problems. They provide opportunities to learn about secondary care investigation of cardiovascular problems (exercise tests, radionucleotide scans, MRI/CT, carotid dopplers, angiography and echocardiography).

Vocational training programmes should offer the opportunity to attend cardiovascular clinics when working in other hospital posts and should also consider attending specialist clinics during their general practice-based placements.

## Learning with other healthcare professionals

Chronic disease management in primary care is a multidisciplinary activity. It is important for the specialty registrar to attend nurse-led cardiovascular disease annual review assessments in practice and gain an understanding of the follow-up of hypertensive patients in the practice's clinics that are often led and delivered by a practice nurse. It is also important to understand the role of district nurses in the assessment and management of leg ulcers or ankle oedema by attending their clinics or home visits. Opportunity should also be taken to observe cardiovascular rehabilitation programmes led by physiotherapists.

## References

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- 2 BHF INFORMATION SERVICE. *BHF Information Service* London: British Heart Foundation, [www.bhf.org.uk/](http://www.bhf.org.uk/) [accessed January 2009]
- 3 NICE. *CG18 and CG34 Hypertension (Persistently High Blood Pressure) in Adults – NICE guideline* [original and treatment update] London: National Institute for Health and Clinical Excellence, [www.nice.org.uk/Guidance/CG34](http://www.nice.org.uk/Guidance/CG34) [accessed January 2009]
- 4 MCCORMICK A, FLEMING D, CHARLTON J. *Morbidity Statistics from General Practice Fourth National Study 1991–1992* London: Office for National Statistics, [www.statistics.gov.uk/downloads/theme\\_health/MB5No3.pdf](http://www.statistics.gov.uk/downloads/theme_health/MB5No3.pdf) [accessed January 2009]
- 5 JOINT HEALTH SURVEYS UNIT. *Health Survey for England 2003* (Erens R and Primatesta P, eds) No. 13 London: HMSO, 2004