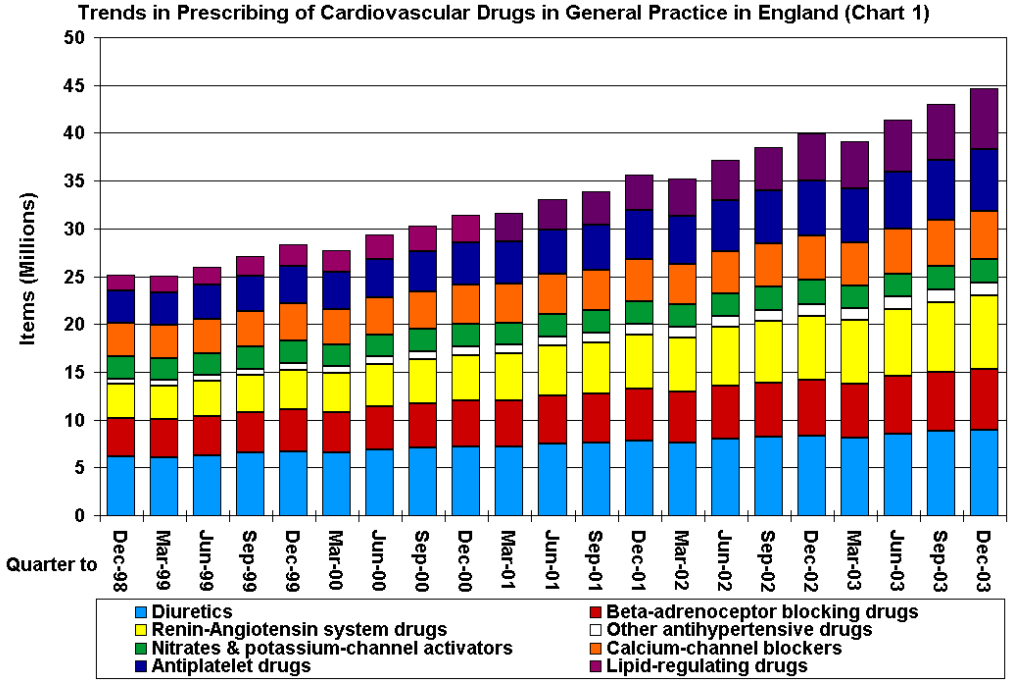
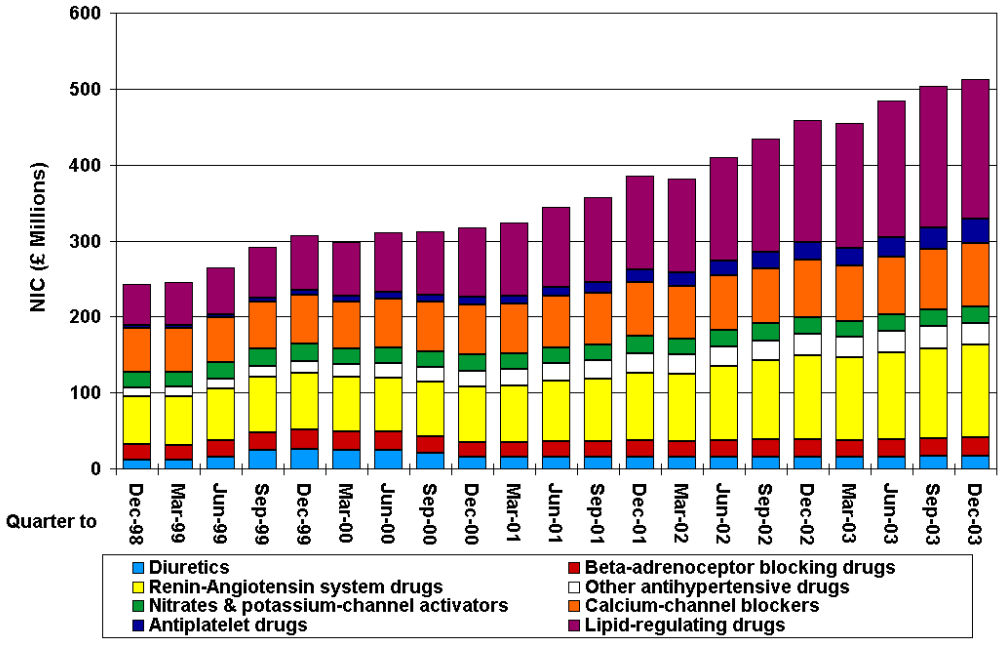
Cardiovascular Prescribing

Cardiovascular disease is the main cause of death in the UK and over half of these deaths (120,000 per annum) are from coronary heart disease (CHD). Prescribing of drugs to prevent and treat CHD has risen to 44.6 million items per quarter and cost has more than doubled to £513 million per quarter in the last 5 years. This rise is mainly due to prescribing of lipid-regulating drugs, drugs affecting the renin-angiotensin system and antiplatelet drugs (Charts 1 and 2).

Trends in Prescribing of Cardiovascular Drugs in General Practice in England (Chart 1)



Trends in Spending on Cardiovascular Drugs in General Practice in England (Chart 2)



One of the targets for the NHS in the Department of Health's Priorities and Planning Framework 2003–2006 is to contribute to a national reduction in death rates from CHD in people under 75 of at least 25% by 2005 compared to 1995–1997. Practice-based

registers should now cover not only patients with established CHD but also the majority of patients at high risk, particularly those with hypertension, diabetes and a body mass index greater than 30.[1] Advice on interventions to reduce the risk of CHD (smoking cessation, increasing physical activity, healthy eating and a reduction in being overweight or obese) should be included in systematic treatment regimens. The recently updated Joint British Societies Coronary Risk Prediction charts and computer program now aim to assess 10 year risk of cardiovascular disease rather than risk of CHD; the objective being to aid treatment of all cardiovascular events including stroke. The charts are simpler than the 1999 version with only three age groups. Separate charts for Type 2 diabetes are no longer provided.[2]

A further target in the Priorities and Planning Framework is to reduce the rate of smoking in manual groups from 32% in 1998 to 26% by 2010. Between April 2002 and March 2003 around 123,900 people successfully quit smoking through NHS smoking cessation services.[3] In the quarter to December 2003 the PPA received 311,000 items for nicotine replacement therapy costing £6.8 million and 26,000 items for bupropion costing £993,000. PPA data do not include supply through other routes such as voucher schemes. The CHD, stroke and hypertension domains in the GMS contract include action for practices to record patients' smoking status and whether smoking cessation advice has been offered.

Hypertension

The recommended blood pressure target for most patients is 140/85mmHg or lower. For patients with renal impairment or diabetes or established cardiovascular disease the target is lower at 130/80mmHg. The British Hypertension Society (BHS) guidelines recommend antihypertensive treatment for sustained hypertension (160/100mmHg or above). Patients with systolic pressure 140-159mmHg or diastolic pressure 90-99mmHg, or both should be offered treatment if any of the following are present:

- target organ damage
- a complication of hypertension or diabetes
- an estimated 10 year risk of cardiovascular disease greater than 20% despite lifestyle advice.[2]

A recent Health Technology Assessment "Lowering blood pressure to prevent MI and stroke: a new preventive strategy" concluded that current guidelines limit the number of people who can receive treatment based on specific blood pressure levels.[4] For example, a younger person with a high blood pressure will have lower risk of MI and stroke compared to an older person with average blood pressure. A recent meta-analysis investigating effects of blood pressure lowering regimens on major cardiovascular events based on different antihypertensive drug classes observed greater risk reductions in regimens which targeted lower blood pressure goals. No clear difference was demonstrated in the risk of CHD between regimens based on ACE inhibitors, beta blockers or diuretics.[5] Choice of antihypertensive therapy depends on contraindications, indications for specific patient groups and cost-effectiveness. ALLHAT compared an ACE inhibitor, a calcium channel blocker and a thiazide diuretic in 33,357 patients with hypertension and one or more risk factors for CHD events.[6] Evidence from ALLHAT supports the use of a thiazide as first line therapy in most patients. The draft NICE guidelines on management of hypertension

in adults in primary care suggest drug therapy should begin with a thiazide or if not tolerated or ineffective a beta blocker.[7]

The BHS guidelines recommend a stepped approach to treatment using an AB/CD algorithm. This algorithm does not have a preferred first line antihypertensive, but states where there are no compelling indications then the least expensive drug (usually a thiazide diuretic) should be chosen. The algorithm is split into drugs that inhibit the renin-angiotensin system (angiotensin converting enzyme (ACE) inhibitors or angiotensin II receptor antagonists (AIIRAs) (A) or beta blockers (B)) and those that do not (calcium channel blockers (C) and diuretics (D)).

- Step 1 in patients 55 years or above, or black patients is C or D
- Step 1 in patients aged 54 years or below and non-black is A (or B*)
- Step 2 is A (or B*) plus C or D.
- Step 3 if blood pressure remains uncontrolled is A (or B*) plus C and D.[2]

* Combination therapy involving B and D may induce more new onset diabetes compared with other combination therapies.

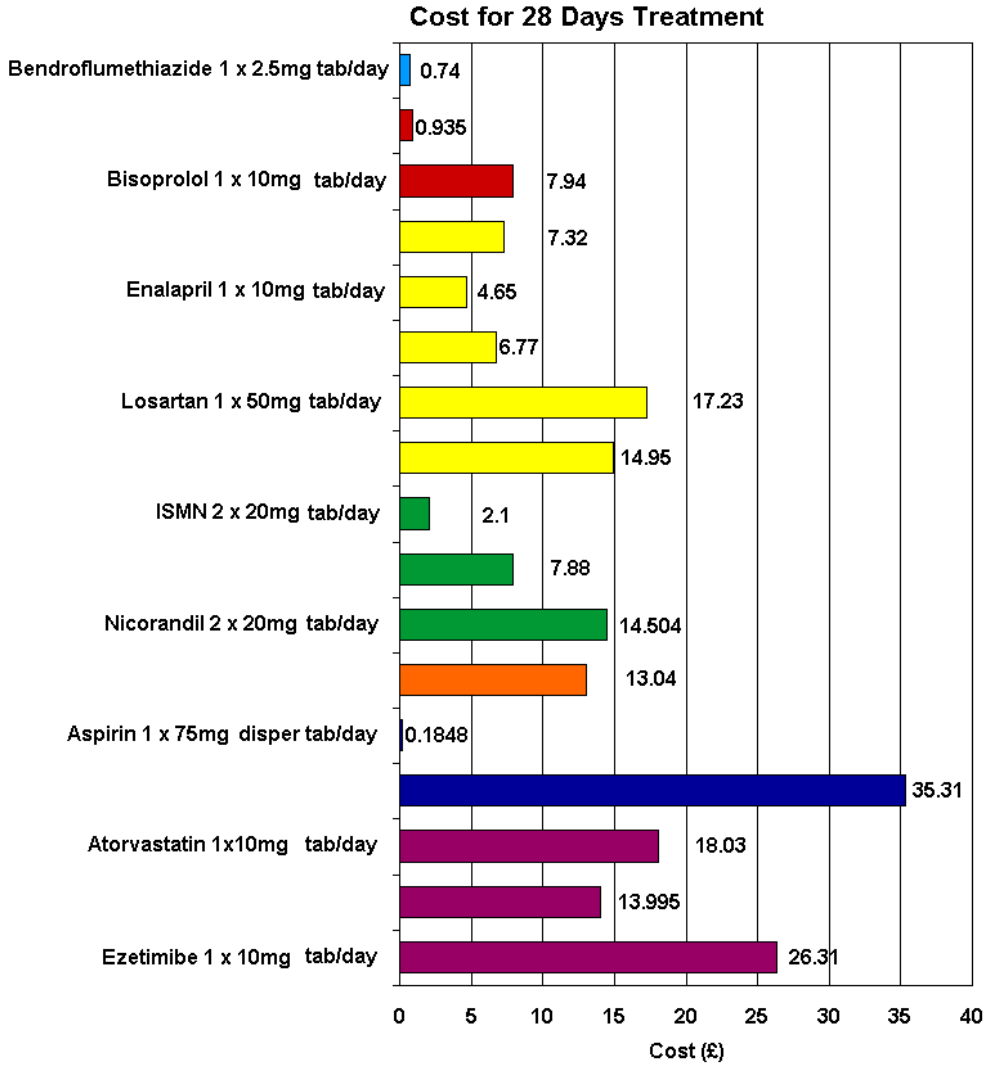
AIIRAs are recommended where people with microalbuminuria or proteinuria have a contraindication to ACE inhibitors[7] or where cough is a limiting adverse effect with ACE inhibitors. ACE inhibitors remain the first choice in treatment of heart failure, although AIIRAs can be used as an alternative if patients are intolerant to ACE inhibitors. This is an unlicensed indication for AIIRAs and trial evidence does not support their routine use.[8]

Hyperlipidaemia

Randomised controlled trials have shown that the absolute benefit of lowering cholesterol concentration is related to an individual's baseline risk of cardiovascular events and to the degree of cholesterol lowering rather than the individual's cholesterol concentration.[9] The Heart Protection Study demonstrated that a statin benefits patients at high risk of CHD regardless of their initial cholesterol concentration. Patients in this study were considered to be at high 5 year risk of death from CHD and received either simvastatin 40mg daily or placebo.[10] Currently there are no long-term outcome data available for the newer drugs, rosuvastatin and ezetimibe, whereas there are outcome data for atorvastatin, pravastatin and simvastatin.

Antiplatelet drugs

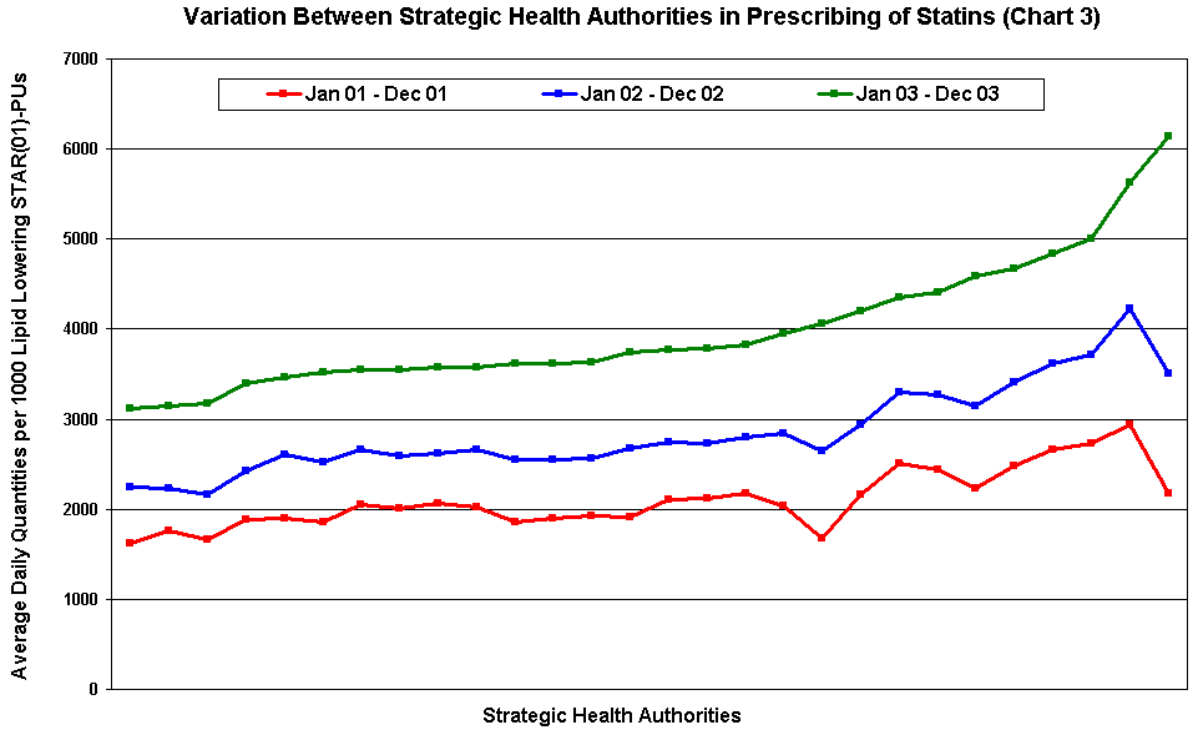
The NSF for CHD recommends low dose aspirin for patients with diagnosed CHD or other occlusive arterial disease. If patients are intolerant of aspirin a useful alternative could be clopidogrel, however it is not cost-effective to prescribe clopidogrel for all patients. The draft NICE appraisal for the secondary prevention of occlusive vascular events recommends a combination of aspirin and dipyridamole modified-release for two years for people who have had an ischaemic stroke or transient ischaemic attack.[11]



Prices based on Drug Tariff May 2004 or Chemist and Druggist March 2004. Dose based on WHO DDDs where possible, otherwise BNF stated dose. The WHO DDD is a unit of measurement based on the assumed average maintenance dose in adults. It may not necessarily reflect the actual dose used.

Prescribing Data

More is spent on lipid regulating drugs than any other class of cardiovascular drug, prescribing and spending have both risen by around 250% over the last 5 years (6.4 million items and £184.7 million, quarter to December 2003). Chart 3 shows the year on year increase in prescribing of statins for strategic health authorities for the last three years. 96% of items for lipid regulating drugs are for statins (simvastatin 2.6 million items and atorvastatin 2.4 million items per quarter). Since the price reduction for simvastatin in December 2003 more was spent on atorvastatin (£76.8 million compared to £70.9 million quarter to December 2003). About 1.8 million people (over 3% of the population) are currently receiving statin therapy and this is potentially saving 6–7,000 lives a year as well as reducing the number of heart attacks.[1]



Diuretics are the most commonly prescribed cardiovascular drugs but only account for 3% of all cardiovascular cost. There were 8.9 million items for diuretics at a cost of £16.3 million (excluding diuretics in combination with other antihypertensive drugs), quarter to December 2003. Thiazides account for 54% of all diuretic items: bendroflumethiazide (bendrofluazide) is the most commonly prescribed (4.5 million items and £5.0 million). Furosemide (frusemide) is the most commonly prescribed loop diuretic (2.5 million items and £3.2 million). Co-amilofruse accounts for 65% of potassium sparing diuretics in combination (560,000 items, £2.3 million per quarter). Amiloride prescribing has fallen to 86,000 items, £222,000 per quarter. Spironolactone prescribing has grown by 330% over the last 5 years to 331,000 items, £1.4 million per quarter.

There were 6.4 million items for beta blockers, quarter to December 2003, costing £24.7 million. Atenolol is most frequently prescribed (4.2 million items, £6.0 million). Prescribing of renin-angiotensin system drugs has more than doubled in the last 5 years with cost increasing by 91% (7.6 million items, £122 million). ACE inhibitor prescribing has grown to 5.8 million items, costing £76.2 million per quarter. The most commonly prescribed ACE inhibitors are ramipril and lisinopril (2.0 million and 1.7 million items, costing £31.2 million and £18.2 million respectively, per quarter). AIIRAs account for 1.8 million items and £45.9 million per quarter. There are 4.9 million prescription items for calcium-channel blockers, costing £83.9 million per quarter. Amlodipine accounts for 39% of prescribing for calcium-channel blockers (1.9 million items, £43.3 million).

Prescribing of antiplatelet drugs has doubled in the last 5 years to 6.5 million items per quarter costing £31.3 million. Aspirin is still the most frequently prescribed (5.7 million items) followed by clopidogrel (0.5 million items), quarter to December 2003. However clopidogrel accounts for three quarters of all antiplatelet drugs cost (£23.1 million) compared to £4.8 million for aspirin.

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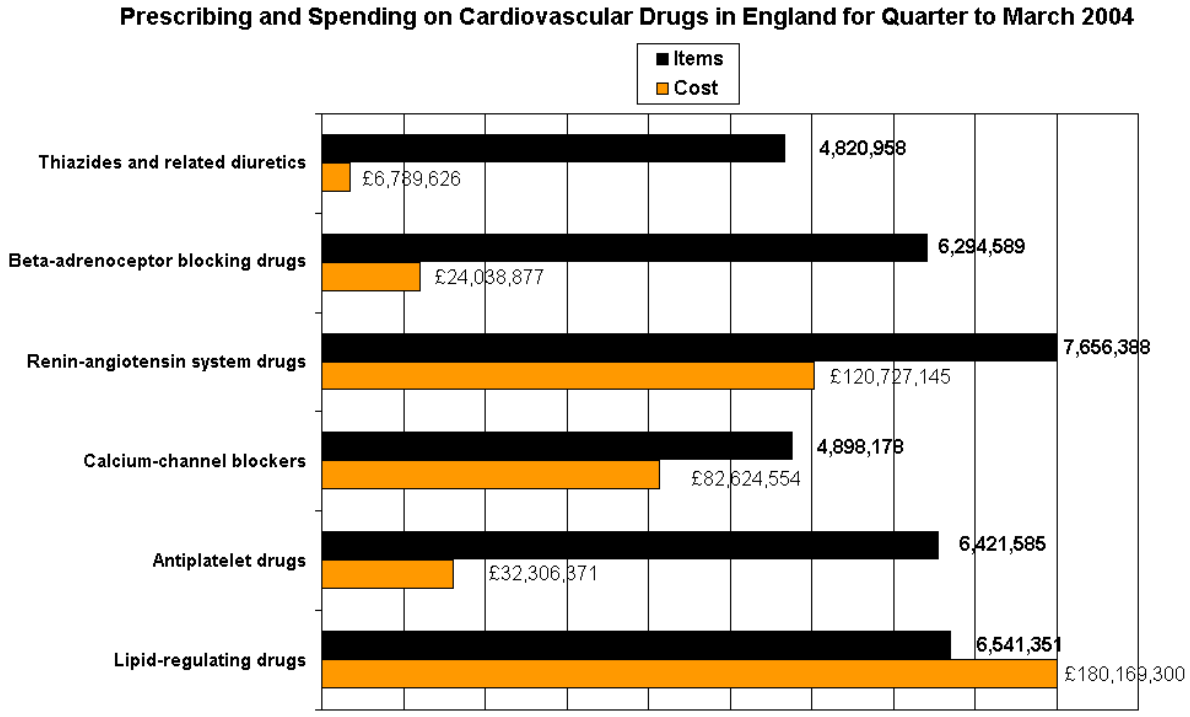
SUMMARY

- Reducing smoking, increasing physical activity, healthy eating and a reduction in being overweight or obese are key interventions in the prevention of CHD in the population.

- Offering treatment and advice to people at high risk of developing cardiovascular disease is important; the Joint British Societies Risk Prediction charts have been updated to identify patients' 10 year risk of cardiovascular disease.

- The main groups of drugs for hypertension are similar in efficacy. Where there are no compelling indications then the least expensive drug should be chosen, usually a thiazide diuretic.

- The benefit of lowering cholesterol depends on the patient's baseline risk of CHD and the degree of cholesterol lowering rather then the cholesterol concentration alone.