# A NATIONAL CONTRACT ON HEART DISEASE AND STROKE

## HEART DISEASE AND STROKE: Social and economic interventions

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<tr>
<td><strong>H1</strong> Continue to make smoking cost more through taxation</td>
<td>Higher cigarette prices reduce cigarette consumption.(^a) However, the effect of increasing prices differs across demographic groups; more marked reduction in consumption is shown with increasing price amongst women and young people.(^b) In the poorest groups, an increase in price produces significant hardship for those who do not curtail their consumption.(^b)</td>
<td>a. Chaloupka FJ, Wechsler H. Price, tobacco control policies and smoking among adults. <em>Journal of Health Economics</em> 1997;16:359-73. \nChoi BCK, Ferrence RG, Pack AWP. Evaluating the effects of price on the demand for tobacco products: review of methodologies and studies. <em>Ontario Tobacco Research Unit</em>, 1997. \nDepartment of Health. <em>Guidance on commissioning cancer services: improving outcomes in lung cancer</em>. Leeds: Department of Health, 1998.</td>
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### Heart Disease and Stroke: Social and Economic Interventions

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<tr>
<td>Local Players and Communities can:</td>
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<tr>
<td><strong>H3</strong> Tackle social exclusion in the community which makes it harder to have a healthy lifestyle</td>
<td>No systematic reviews were identified in this area.</td>
<td>a. Hillsdon M, Thorogood M. A systematic review of exercise promotion strategies. British Journal of Sports Medicine 1996;30:84-9.</td>
</tr>
<tr>
<td><strong>H4</strong> Provide incentives to employees to cycle or walk to work, or leave their cars at home</td>
<td>Public health exercise promotion strategies aimed at modifying the environment, to encourage walking and cycling, are likely to reach a greater proportion of the inactive population than efforts that aim to increase the use of exercise facilities.</td>
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| People can: | | |
| **H6** Take opportunities to better their lives and their families’ lives, through education, training and employment | There is a consistent and continuous gradient between the prevalence of cardiovascular disease and socioeconomic status, such that people from lower socioeconomic status have more disease. The principal measures of socioeconomic status in research have been education, occupation, income or a combination of these. No evidence could be found to support the view that individuals taking responsibility to better their lives results in a reduction of disease prevalence. For many individuals, social circumstances may make it impossible for them to better their lives. Structural and legislative measures are the most effective interventions in reducing health inequalities. | a. Acheson D. Independent inquiry into inequalities in health report. Department of Health, London, 1998. b. Acheson D. Independent inquiry into inequalities in health report. Department of Health, London, 1998. c. Gepkens A, Gunning SL. Interventions to reduce socioeconomic health differences: A review of the international literature. European Journal of Public Health 1996;6:218-26. |
# HEART DISEASE AND STROKE: Environmental interventions

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<td><strong>Government and National Players can:</strong></td>
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<td></td>
<td>Passive smoking at the workplace has similar coronary heart disease risks to exposure at home. b Daily consumption of cigarettes at work can be reduced by employers encouraging a smoke free work environment, but smokers may compensate by smoking more during non-working hours. c More recent evidence shows that smoke-free workplaces appear to reduce the overall consumption of cigarettes by a substantial amount. d A total ban on cigarettes in the workplace coupled with monetary incentives to quit can improve cessation rates substantially. e</td>
<td>b. Wells AJ. Heart disease from passive smoking in the workplace. Journal of the American College of Cardiology 1998;31:1-9.</td>
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<tr>
<td>Local Players and Communities can:</td>
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<tr>
<td>H8 Through local employers and others, provide a smoke-free environment for non-smokers</td>
<td>Passive smoking at the workplace is associated with similar coronary heart disease risks as exposure at home. a Daily consumption of cigarettes at work can be reduced by employers encouraging a smoke free work environment, but smokers may compensate by smoking more during non-working hours. b More recent evidence shows that smoke-free workplaces appear to reduce the overall consumption of cigarettes by a substantial amount. c A total ban on cigarettes in the workplace coupled with monetary incentives to quit can improve cessation rates substantially. d A review of interventions for preventing tobacco use in public places is currently being prepared. g</td>
<td>a. Wells AJ. Heart disease from passive smoking in the workplace. Journal of the American College of Cardiology 1998;31:1-9.</td>
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HEART DISEASE AND STROKE: Environmental interventions

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<tr>
<td>H9</td>
<td>Through employers and staff, work in partnership to reduce stress at work</td>
<td>Job insecurity is associated with high blood pressure and raised mortality rates.(^a) No systematic reviews of the effects of interventions to reduce stress at work were identified.</td>
</tr>
<tr>
<td>H10</td>
<td>Implement the Integrated Transport Policy – <em>A New Deal for Transport: Better for Everyone</em> – including a national cycling strategy and measures to make walking more attractive</td>
<td>Reducing air pollutants due to traffic benefits health. Exposure to air pollutants is associated with earlier deaths and hospital admissions for respiratory and cardiovascular disease. Evidence regarding the effects of particles, ozone and sulphur dioxide is sufficient for the size of the effect to be quantified. For nitrogen dioxide and carbon dioxide there is insufficient evidence to allow quantification but there is evidence to suggest exposure affects health.(^a)</td>
</tr>
<tr>
<td>H11</td>
<td>Provide safe cycling and walking routes</td>
<td>Public health exercise promotion strategies aimed at modifying the environment, to encourage walking and cycling, are likely to reach a greater proportion of the inactive population than efforts that aim to increase the use of exercise facilities.(^a)</td>
</tr>
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**People can:**

| H12    | Protect others from second-hand smoke | Residential exposure to passive smoke is associated with increased risk of coronary heart disease, although conclusive evidence of a causal relationship is not presently available.\(^a\) A reduction in residential passive smoking is likely to be particularly effective in protecting the health of children.\(^b\) A systematic review on family/carer smoking control programmes for reducing children’s exposure to environmental tobacco smoke is in preparation.\(^c\) Policy makers should be aware that there are many contradictory reviews in this area – those published studies suggesting that passive smoking is not harmful were 88 times more likely to have an author affiliated with the tobacco industry.\(^d\) |

**REFERENCES**


\(^a\) Barnes DE, Bero LA. Why review articles on the health effects of passive smoking reach different conclusions. JAMA 1998;279:1566-70.
### HEART DISEASE AND STROKE: Personal behaviour

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| **H13** Control advertising and promotion of cigarettes | Control of advertising is an effective intervention to reduce smoking.\(^a\) Interventions aimed at retailers to enforce the legal age limit on selling cigarettes to young people reduces their access to cigarettes but there is no evidence that this affects smoking behaviour.\(^b\) Restricting access to cigarette vending machines limits access, but has not been shown to affect behaviour.\(^c\) Stronger regional, national and international strategies are required if restriction of youth access is to contribute to a reduction in smoking prevalence in this age group.\(^d\) | a. Department of Health. Guidance on commissioning cancer services improving outcomes in lung cancer. Leeds: Department of Health, 1998.  Smee C. Effect of tobacco advertising on tobacco consumption: a discussion document reviewing the evidence. London: Department of Health, 1992. Sone T. Effects of tobacco advertising regulations in various countries. Nippon Koshu Eisei. Zasshi 1995;42:1017-28.  

| **H14** Develop healthy living centres | There is no evidence that community heart health interventions (eg education, use of local media, screening and case-finding, sports clubs and involving local industry) affect smoking prevalence, physical activity level, mean blood pressure, mean cholesterol level or cardiovascular disease mortality. Community level analysis may mask an effect on high-risk groups.\(^e\) Once the intervention is stopped even the most significant treatment effects are not maintained.\(^f\) | a. Dobbins M, Beyers J. The effectiveness of community-based heart health projects: A systematic overview update. Ontario Public Health Research, Education & Development Program 1999.  Ebrahim S, Davey-Smith G. Health promotion in older people for cardiovascular disease prevention - a systematic review and meta-analysis. London: Health Education Authority, 1996.  
HEART DISEASE AND STROKE: Personal behaviour

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<td></td>
<td>There are no controlled intervention studies of the effects of eating more fruit and vegetables, so the size and nature of any real effect remains uncertain. The associations reported could be due to the fact that socioeconomic status is associated with both diet and risk of cardiovascular disease. c</td>
<td>c. Serdula MK, Byers T, Mokdad AH, Simoes E, Mendlein JM, Coates RJ. The association between fruit and vegetable intake and chronic disease risk factors. Epidemiology 1996;7:161-5.</td>
</tr>
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<td></td>
<td>Available evidence suggests that consumption of oily fish - rich in omega-3 fatty acids - is associated with reduced mortality from coronary heart disease in high risk groups, but not in low risk groups. f</td>
<td>g. Hooper L, Ness A, Higgins JPT, Moore T, Ebrahim S. Correspondence re GISSI-Prevenzione trial. Lancet 1999;354:1557.</td>
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<tr>
<td></td>
<td>Vitamins</td>
<td>i. Hooper L, Ness A, Davey Smith G. The HOPE trial. New</td>
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<td></td>
<td>There is no evidence that beta-carotene h and vitamin E supplements affect cardiovascular disease.</td>
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<td></td>
<td>A review of the effects of antioxidant vitamins for coronary heart disease prevention is in preparation. i</td>
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<td></td>
<td>While changes in diet are feasible in controlled settings in the short term and can result in reductions in cardiovascular risk factors, changing diets of free-living individuals through counselling and education is rarely possible. j</td>
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**POLICY**

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<th>H15</th>
<th>(cont) Ensure access to and availability of, a wide range of foods for a healthy diet</th>
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<td>H16</td>
<td>Provide sound information on the health risks of smoking, poor diet and lack of physical activity</td>
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<tr>
<td>H17</td>
<td>Encourage the development of healthy schools and healthy workplaces (cont)</td>
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**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**

| Low socioeconomic status is associated with a poorer diet and there is a growing disparity in diet between the rich and poor in the UK. Households in the lower end of income distribution spend a greater proportion of their income on food than those at the top. Low income restricts both the ability to afford many healthy foods and access to food retailers where healthy food can be purchased more cheaply.1 |

| Adverse dietary patterns are reinforced by poverty as pricing policy encourages purchase and consumption of cholesterol-raising diets. By extending VAT to the main sources of dietary saturated fat, cardiovascular disease could be avoided and tax revenue generated.2 However it is unclear whether this will improve poor peoples’ diets or worsen health by increasing poverty. |

| Health education campaigns which provide information but no additional interventions are only effective in altering the behaviour of higher status socio-economic groups.3 Programmes providing information together with personal support can be used to change behaviour across all socio-economic groups.4 |

| Didactic knowledge based programmes have no effect on behaviour. Interactive programmes are more effective at changing behaviour than non-interactive ones.5 |

| Drug use prevention programmes and sexual risk reduction programmes have been the most comprehensively evaluated.6 |

| School based programmes which use social reinforcement techniques (and not simply education or information) reduce the uptake of smoking.7 |

| Healthy school programmes concerned with healthy eating, fitness, injuries and mental health are more successful at increasing knowledge than those tackling substance abuse, safe sex and oral hygiene.8 |

| Dietary interventions have been shown to lower fat intake slightly but have had |

**REFERENCES**

- Brug J, Campbell M, van Assema P. The application and impact of computer generated personalised nutrition education: a review of the literature. Patient Education and
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**POLICY**

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<th>H17</th>
<th>(cont) Encourage the development of healthy schools and healthy workplaces</th>
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**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**

no impact on intake of fibre, fruit or vegetables has been detected. Computer generated nutrition education is more likely to be read, remembered and experienced as personally relevant than are standard educational materials. School-based interventions encouraging healthy eating behaviours of 9-10 year old children have significant positive effects in attitude and knowledge, but only slight changes in eating. A systematic review of school programmes for prevention of smoking is in preparation. More widespread community interventions operating at multiple sites may have an impact on smoking rates. Mass media campaigns may be effective in preventing uptake of smoking among young people, but the intensity and duration of campaigns are important in determining their effects.

**Workplace interventions**

Individual programmes (eg smoking counselling, risk factor screening and comprehensive risk assessment) have been effective in influencing behaviour. Healthy eating interventions based at work sites can be effective in lowering blood cholesterol levels. Workplace programmes for detection and control of high blood pressure have been only poorly evaluated and have not been shown to offer any benefits. Work place tobacco policies can reduce tobacco consumption at work and worksite environmental tobacco smoke exposure.

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<tr>
<th>H18</th>
<th>Enforce the ban on illegal sale of cigarettes to underage smokers</th>
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Interventions aimed at retailers to enforce the legal age limit reduces young people’s access to cigarettes but there is no evidence that this affects smoking behaviour. Targeting retailers with educational programmes alone is less effective than combined education and enforcement (warnings or visits by police or health officials), but sustained effects require enforcement at least 4-6 times a year.

**REFERENCES**

HEART DISEASE AND STROKE: Personal behaviour

### Policy

**H19** Target information about a healthy life on groups and areas where people are most at risk

### Systematic Reviews of Relevant Evidence

Targeting information – in conjunction with other health promotion activities on high-risk groups may be more effective in reducing cardiovascular risk factors than community wide use of heart health interventions but definitive evidence is lacking. a

Individuals with a central pattern of obesity are at particularly high risk of cardiovascular mortality, hypertension and non-insulin dependent diabetes. b The following groups are also at high risk of obesity and consequent heart disease: children in families with one or more overweight parents; lower status socio-economic groups, in particular women in these groups; people with learning disabilities; particular ethnic groups, including the south Asian and Afro-Caribbean communities; those who have given up smoking; and the elderly. c

A review of healthy eating interventions in ethnic minorities shows a dearth of UK studies, poor methodology and considerable uncertainty about how to develop programmes suitable for a multi-cultural society. d

Interventions promoting smoking cessation are more likely to be effective if they are based on a knowledge of differences in smoking patterns amongst ethnic and other population groups. e

### References


c. White M. Effectiveness of interventions to promote healthy eating in people from minority ethnic groups: a review. Health Education Authority, 1998.


### People can:

**H20** Manage their blood pressure if they are at risk of or suffering from circulatory disease (cont)

Observational studies have demonstrated a strong relationship between blood pressure and risk of coronary heart disease and stroke with no evidence of any threshold below which further reductions are not associated with greater benefits. a

Drug treatment of hypertension decreases the risk of fatal and non-fatal stroke, cardiac events, and total mortality. The biggest benefit is seen in those with highest baseline risk of cardiovascular disease b and in elderly people. c

### References


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<tr>
<td>H20 (cont) Manage their blood pressure if they are at risk of or suffering from circulatory disease</td>
<td>For some high-risk groups, such as diabetics, trials have shown that intensive lowering of blood pressure (to levels of 150/85 or below) reduces the risk of cardiovascular events more effectively than less intensive regimes.³ Weight reduction in obese hypertensive patients produces only a small reduction in blood pressure (about –3 mmHg systolic) and may reduce medication dosage requirements.⁴ Salt restriction in hypertensive patients has only a small effect on blood pressure which may be due to concomitant weight reduction.⁵ Considerable controversy surrounds the salt-blood pressure relationship. While there is little doubt that population levels of blood pressure are associated with dietary salt intake,⁶ the size of this effect is open to debate.⁷ Studies of the effects of dietary salt restriction show variable results. While small, short-term experiments of salt restriction using cross-over designs are able to show modest reductions in blood pressure, larger, longer term (ie over 6 months), parallel group trials show much smaller effects on blood pressure, particularly among normotensive adults reflecting the difficulties of maintaining a low salt diet. Among children, there is evidence from one well-designed large trial that salt restriction has a prolonged effect on blood pressure.¹ The public health impact of reducing dietary salt (through lower hidden salt in processed foods) may be smaller than might be predicted from systematic reviews including both long and short term trials, but could be expected to have an effect in children.</td>
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i. Hofman A, Hazebroek A, Valkenburg HA. A randomized
### HEART DISEASE AND STROKE: Personal behaviour

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<td>H21</td>
<td>Stop smoking or cut down, watch what they eat and take regular physical activity</td>
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|        | In overweight people, any level of weight loss has significant health benefits. This could usefully be emphasised in health promotion campaigns.  
Attempts to lower blood pressure and blood cholesterol by increasing physical activity have not been shown to be effective.  
The health benefits of increasing physical activity are considerable. It is now recognised that regimens need not be intensive (eg three times a week for at least 20 minutes) to improve health outcomes. |
|        | For further relevant evidence see H24 and H31. |

### REFERENCES
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</table>
| **Government and National Players can:** | **Stopping smoking** | a. NHS Centre for Reviews and Dissemination. Smoking cessation: what the health service can do. Effectiveness matters 1998;3(1).


e. NHS Centre for Reviews and Dissemination. The prevention and treatment of obesity. Effective Health Care 1997;3(2).


<table>
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<tr>
<th><strong>Diet and obesity</strong></th>
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<tr>
<td>Opportunistic screening for obesity at the primary care level, particularly amongst known high risk groups, may be a useful preventive intervention. Primary health care teams will be more effective in this context if they are given adequate training in the prevention and treatment of obesity.</td>
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<tr>
<td>Promoting physical activity in children helps reduce weight and family therapy can be beneficial in high risk children. Drug treatments are only helpful in the short term. Dietary interventions have been shown to lower fat intake slightly but have had no impact on intake of fibre, fruit or vegetables has been detected. Computer generated nutrition education is more likely to be read, remembered and experienced as personally relevant than are standard educational materials.</td>
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<th><strong>Diet and cardiovascular risk factors</strong></th>
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<tr>
<td>Reductions in blood pressure and blood cholesterol can be achieved by dietary changes promoted through advice and education. However there is little consequent impact on overall mortality and improvements tend to be among the more socially ‘advantaged’ participants. The effects of dietary advice given by dieticians compared with other health professionals will be addressed in a forthcoming review.</td>
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HEART DISEASE AND STROKE: Services interventions

**POLICY**

H22  
*Encourage doctors and nurses and other health professionals to give advice on healthier living, and deliver effective and efficient services (cont)*

**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**

Intensive efforts to detect, treat and follow up patients with hypertension reduces stroke mortality and socio-economic variations in stroke mortality.

**Physical activity**

Advice to promote physical activity in primary care has been inadequately studied, with few UK trials. Only small effects have been found.

**Alcohol intake**

Routine opportunistic detection and brief treatment of patients in primary care and hospital settings has been shown to reduce alcohol consumption by up to 20% in those with consumption levels above recommended guidelines. Brief interventions are as effective as more expensive specialist treatment in this context, and they may have a concomitant impact on the incidence of alcohol related heart disease.

**Professional organisation and practice**

Use of computers can improve the administrative aspects of hypertensive patient care. In different clinical settings, computer aided decision support appears to improve prescribing and preventive care, but effects on patient outcomes have not been widely studied. Computer aided decision support for hypertension management has not been shown to be more effective than with manual systems for assessing risk. Decision aids for patients following screening improve knowledge and allow patients to be more active in decision making without increasing anxiety.

No systematic reviews of the effects of nurse-led clinics in primary care focussing on secondary prevention have been identified. One trial has shown that they are able to increase the amount of secondary prevention – both through lifestyle changes and pharmacological treatments - for coronary heart disease.

Printed educational materials, conferences and workshops appear to have very little effect on professional practice and health outcomes. Outreach visits and use of local opinion leaders are more likely to achieve professional behaviour.

**REFERENCES**


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| H22 (cont) Encourage doctors and nurses and other health professionals to give advice on healthier living, and deliver effective and efficient services (cont) | change. However professional outreach visits combined with social marketing are more promising and have an effect on prescribing levels. thud Audit and feedback may also be effective in altering prescribing, but enhancements to the process do not appear to yield greater effects. s

Clinical guidelines (produced internally, with explicit dissemination, education and implementation strategies, and using patient-specific reminders at the time of consultation) used by physicians in both primary care and hospitals improve the process of care, and patient outcomes where this has been measured. t Another review examining the effects of clinical practice guidelines in primary care only found little evidence that guidelines improve patient outcomes. u In professions allied to medicine (including mainly nurses), there is some evidence that guideline driven care is effective at changing the process and outcome of care. v

Reviews examining the effects of paper reminders w and computerised reminders on professional practice, health outcomes a and drug prescribing m are currently being prepared. A further review will focus on educational, financial and regulatory interventions to promote implementation of preventive services. x The effects on preventive care of substituting nurses for doctors in primary care will also be examined. y

A review of the effect of target payments to primary care physicians is currently being prepared. z

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HEART DISEASE AND STROKE: Services interventions

**POLICY**

H22  
(cont) Encourage doctors and nurses and other health professionals to give advice on healthier living, and deliver effective and efficient services

**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**


**REFERENCES**

The National Service Framework for coronary heart disease has focused on smoking cessation, healthy eating, physical activity and reducing obesity and overweight among the general population, and GPs are expected to focus on


b. Freemantle N, Harvey EL, Wolf F, Grimshaw JM,
HEART DISEASE AND STROKE: Services interventions

POLICY

H23 (cont) Develop National Service Frameworks and work towards their implementation

SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE

secondary prevention and identifying those at high risk of developing cardiovascular disease. Although it does not refer explicitly and systematically to the relevant evidence base, it draws on much of the evidence referred to in this report.

Implementation of service frameworks will depend on influencing health professionals. Printed educational materials, conferences and workshops appear to have very little effect on professional practice and health outcomes; outreach visits and use of local opinion leaders are more likely to achieve professional behaviour change. However professional outreach visits combined with social marketing are more promising and have an effect on prescribing levels. Audit and feedback may also be effective in altering prescribing, but enhancements to the process do not appear to yield greater effects.

Clinical guidelines (produced internally, with explicit dissemination, education and implementation strategies, and using patient-specific reminders at the time of consultation) applied in both primary care and hospitals may improve the process of care, but have not been shown to improve patient outcomes.

Reviews examining the effects of paper reminders, and computerised reminders on professional practice, health outcomes and drug prescribing are currently being prepared. A further review will focus on educational, financial and regulatory interventions to promote implementation of preventive services. The effects on preventive care of substitution of nurses for doctors in primary care will also be examined.

REFERENCES


HEART DISEASE AND STROKE: Services interventions

**Local Players and Communities can:**

- **H24** Provide help to people who want to stop smoking (cont)

  A number of interventions are effective in promoting smoking cessation. These include nicotine replacement therapy (inhalers and patches appear to be slightly more effective than chewing gum); behaviour modification, combined with advice and social skills training; and encouragement and brief advice given by well trained GPs or other health professionals during routine consultations (which is particularly effective with more motivated patients). Among patients with coronary heart disease, smoking cessation advice increases quit rates by 45% compared with usual care. Patient education and counselling have been shown to significantly reduce smoking and drinking rates. Larger effects are seen using behavioural techniques, particularly self monitoring.

  There is no evidence that silver acetate, aversion treatments, lobeline, acupuncture, anxiolytics or antidepressants are effective in smoking cessation.

**REFERENCES**

- Update Software.
  
  


**POLICY** | **SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE** | **REFERENCES**
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H25 Improve access to a variety of affordable food in deprived areas | Low socioeconomic status is associated with a poorer diet and there is a growing disparity in diet between the rich and poor in the UK. Households at the lower end of income distribution spend a greater proportion of their income on food than those at the top. Low income restricts both the ability to afford many healthy foods and access to food retailers where healthy food can be purchased more cheaply. | a. James WPT, Nelson M, Ralph A, Leather S. Socioeconomic determinants of health: The contribution of nutrition to inequalities in health. British Medical Association 1997;314:1545-53.
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<tr>
<td>H26</td>
<td>Interventions promoting physical activity amongst the general public are more likely to be effective if they involve activities which can fit into an individual’s daily routine than if they require attendance at exercise facilities.(^a)</td>
<td>a. Hillsdon M, Thorogood M. A systematic review of exercise promotion strategies. British Journal of Sports Medicine 1996;30:84-9.</td>
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| H27    | Consultants involved in both the NHS and private care determine who gets what and how long they wait under the NHS. While this arrangement may be convenient for government and health authorities,\(^a\) it may increase NHS waiting lists. No systematic reviews of the determinants of length of waiting lists were found. There is evidence of unequal access to testing and re-vascularisation by gender, ethnicity and socio-economic group.\(^b\) Monitoring testing and introducing procedures to promote equity may reduce inequality.\(^b\) | a. Klein R, Day P, Redmayne S. Rationing in the NHS: the dance of the seven veils-in reverse. British Medical Bulletin. 1995;51:769-80.  
| H28    | Lowering blood pressure in hypertensive stroke survivors reduces risk of further stroke.\(^a\) Antiplatelet agents such as aspirin reduce risk of stroke recurrence.\(^b\) For stroke survivors in atrial fibrillation, warfarin is more effective than aspirin.\(^b\) Carotid endarterectomy reduces the risk of stroke in patients with severe carotid artery stenosis who have recently suffered a transient ischaemic attack in the part of the brain supplied by the diseased artery.\(^3\) | a. Gueyffier F, Bossel JP, Bautier F, et al. Effect of antihypertensive treatment in patients having already suffered from stroke: gathering the evidence. Stroke 1997;28:2557-62.  
## POLICY

### H29
Support those suffering from coronary heart disease and stroke, and their carers

### H30
Implement the National Service Frameworks (cont)

## SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE

### Depressive symptoms and social support have direct effects on prognosis after myocardial infarction, suggesting that treating depression and mobilising social support may be beneficial. For reviews on cardiac rehabilitation, see H31: rehabilitation.

Caring for people with stroke is associated with significant emotional and social problems. A number of simple interventions to reduce patient and carer psychosocial problems have been studied, but there is insufficient evidence to judge whether any of these work. Systematic reviews assessing the effects of information provision and stroke liaison workers are in preparation.

The National Service Framework for coronary heart disease has focused on smoking cessation, healthy eating, physical activity and reducing obesity and overweight among the general population. GPs are expected to focus on secondary prevention and identifying those at high risk of developing cardiovascular disease. Although it does not refer explicitly and systematically to the relevant evidence base, it draws on much of the evidence referred to in this report.

Implementation of service frameworks will depend on influencing health professionals. Printed educational materials, conferences and workshops appear to have very little effect on professional practice and health outcomes; outreach visits and use of local opinion leaders are more likely to achieve professional behaviour change. However professional outreach visits combined with social marketing are more promising and have an effect on prescribing levels. Audit and feedback may also be effective in altering prescribing, but enhancements to the process do not appear to yield greater effects.

## REFERENCES


HEART DISEASE AND STROKE: Services interventions

**POLICY**

H30  (cont) Implement the National Service Frameworks

**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**

Use of clinical practice guidelines in primary care have not been shown to improve patient outcomes.\(^d\)

Reviews examining the effects of paper reminders,\(^e\) and computerised reminders on professional practice, health outcomes\(^f\) and drug prescribing\(^g\) are currently being prepared. A further review will focus on educational, financial and regulatory interventions to promote implementation of preventive services.\(^h\) The effects on preventive care of substitution of nurses for doctors in primary care will also be examined.\(^i\)

The national service framework for coronary heart disease, although it does not refer explicitly and systematically to the relevant evidence base, draws on much of the evidence referred to in this report.\(^j\)

**REFERENCES**


H31 Identify those at risk of heart disease and stroke and provide high quality services (cont)

Access to healthcare facilities for high risk ethnic minorities could be improved through the use of focused inner city facilities with well trained and bilingual staff and also by improving referral mechanisms to secondary care.\(^a\)
HEART DISEASE AND STROKE: Services interventions

**POLICY**

**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**

Prevention: Targeting obesity

There is no evidence that community-based interventions using educational and social learning methods aimed at reducing the prevalence of obesity among adults are successful. Financial incentives in combination with educational programmes result in minor weight loss, but appeal most to those who are not overweight.

Interventions designed to reduce sedentary behaviour are effective in reducing overweight in children.

Family therapy can prevent and reduce obesity in high-risk children. It has been shown to be more effective than standard dietary and exercise interventions in this context.

Drug treatments are effective in reducing obesity over the short term. In general they are best used as an adjunct to diet and lifestyle management in the treatment of obesity.

Surgery is the most effective and possibly the most cost-effective way to reduce weight in morbidly obese people. Particularly effective techniques are gastric bypass and vertical banded gastroplasty.

Long-term follow-up and the use of maintenance interventions in weight loss programmes are necessary to sustain weight loss over time.

Reviews on prevention and treatment of obesity in children, the effect of low-fat diets for reducing obesity, and the organisation of care for managing overweight and obese people are currently in preparation.

Prevention: Targeting hypertension

Intensive programmes of hypertension detection and treatment following protocols, not only reduces cardiovascular mortality, but also narrow social class mortality differences.

**REFERENCES**


HEART DISEASE AND STROKE: Services interventions

**POLICY**

H31 (cont) Identify those at risk of heart disease and stroke and provide high quality services (cont)

**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**

There is no evidence that screening programmes in shopping centres or housing blocks increase detection or reach disadvantaged people, as intended.\(^6\) Case finding is particularly useful when linked with professional training, protocols and reminders, given to both patients and doctors.\(^6\) The diagnosis of hypertension should take into account the full clinical picture, including risk factors such as obesity and smoking, and should not rely solely on measurement of blood pressure values.\(^6\)

Non-pharmacological interventions – salt restriction, alcohol reduction, stress management, physical exercise - for controlling blood pressure in hypertensive people have only small effects compared with drug therapy.\(^6\) Weight reduction stands out as showing modest but important effects.\(^3\) Trials of salt reduction have shown only very small reductions in blood pressure among normotensive people and the findings do not support a general recommendation to reduce salt intake.\(^6\)

Anti-hypertensive drug therapy is effective in treating those at high risk of stroke, particularly the elderly.\(^1\) Up to the age of 80 years, drug treatment is more beneficial in terms of numbers-needed-to-treat than among younger adults aged less than 60 years.\(^1\) Above this age, the benefits of treatment have not been established.\(^5\) Physicians should take particular care to ensure that the specific drugs used are suited to patient characteristics and are the most cost-effective available.\(^5\)

Tight control of blood pressure (aiming for a blood pressure of 150/85) in patients with diabetes significantly reduces the risk of stroke and mortality due to diabetic complications (stroke, coronary heart disease, peripheral vascular disease, renal failure and microvascular complications).\(^1\)

**REFERENCES**


HEART DISEASE AND STROKE: Services interventions

**POLICY**

H31 (cont) Identify those at risk of heart disease and stroke and provide high quality services (cont)

**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**

Prevention: Targeting cholesterol levels

General population screening for blood cholesterol is not advisable as cholesterol level, by itself, is a relatively poor predictor of coronary heart disease events. Cholesterol reduction in people at high risk of coronary heart disease, even if

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HEART DISEASE AND STROKE: Services interventions

**POLICY**

H31 (cont) Identify those at risk of heart disease and stroke and provide high quality services (cont)

**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**

their cholesterol levels are not raised, reduces mortality.a

Dietary interventions may lower blood cholesterol in metabolic wards, prisons and psychiatric hospitals, but their effects in “free-living” populations is limited by the lack of long-term adherence to such diets. If dietary interventions are applied for at least two years, they may reduce cardiovascular disease events, but the evidence is weak.b

More specific dietary changes, such as increasing fibre and garlic, show only small effects in trials that were poorly designed.

Drug therapy, in particular the use of statins, to lower cholesterol levels, is effective, and cost effective when targeted at people who are at high risk of coronary heart disease.c

Use of statins for primary prevention has been shown to reduce combined primary outcomes of vascular events and revascularisation procedures even in people with only average levels of blood cholesterol (5.7mmol/l) in a major trial. In higher risk men with a mean blood cholesterol of 7.0mmol/l in Scotland, statins were effective.d

**Prevention: Other dietary interventions**

Both a “Mediterranean” diet and increased consumption of oily fish for secondary prevention appear to have dramatic effects in reducing recurrence and mortality and are very cost-effective compared with statins, but have only been examined in small trials that have not been replicated.e

**REFERENCES**


Prevention: Targeting other risk factors

Multiple risk factor interventions (e.g., smoking cessation, dietary advice, physical activity) for primary prevention in primary care have not been shown to have convincing effects on cardiovascular events, and have only small effects on risk factors.a

Observational data suggest that blood homocysteine levels are associated with increased risk of heart disease and stroke. Lowering blood homocysteine with folic acid and vitamin B6 or B12 supplements is feasible and may therefore reduce cardiovascular disease.b Trials of folic acid and vitamin supplementation measuring substantive outcomes have not yet reported.

Modest alcohol intake of one to four drinks per day may lower coronary heart disease incidence.c The beneficial effects of alcohol may be mediated through increases in high density lipoprotein cholesterol and haemostatic factors.d However, even low alcohol intake may have adverse effects on various cancers, cirrhosis, haemorrhagic stroke, blood pressure, injuries and accidents.e

No specific intervention programmes preventing alcohol misuse by young people can yet be recommended as there is little evidence that any presently available programmes are effective in the long term.f Short and medium term reductions in...

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H31 (cont) Identify those at risk of heart disease and stroke and provide high quality services (cont)

**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**

drinking were found in several trials but these were of low methodological quality.1

Infection with Helicobacter pylori is associated with moderately increased risk of coronary heart disease not accounted for by other measured risk factors, but the more methodologically robust prospective studies failed to show a statistically significant relationship.5

No cardiovascular benefits have been detected from the use of hormone replacement therapy (HRT).3

Atrial fibrillation is an important independent risk factor for stroke.1 This risk can be reduced substantially by treatment with warfarin or more modestly by treatment with aspirin.1 Treatment choice for individual patients can be guided by decision analysis tools which take into account underlying stroke risk and risk of haemorrhage (which is greater on warfarin than on aspirin).k

A number of interventions are effective in promoting smoking cessation.1 These include nicotine replacement therapy (inhalers and patches appear to be slightly more effective than chewing gum);m behaviour modification, combined with advice and social skills training;1 and encouragement and brief advice given by well trained GPs or other health professionals during routine consultations (which is particularly effective with more motivated patients).9 Among patients with coronary heart disease, smoking cessation advice increases quit rates by 45% compared with usual care.9 Patient education and counselling have been shown to significantly reduce smoking and drinking rates. Larger effects are seen using behavioural techniques, particularly self monitoring.9

There is no evidence that silver acetate,r aversion treatments,s lobeline,t acupuncture, u anxiolytics or antidepressants v are effective in smoking cessation.

**REFERENCES**


Law M, Tang JL. An analysis of the effectiveness of interventions intended to help people stop smoking.
HEART DISEASE AND STROKE: Services interventions

**POLICY**

H31  (cont) Identify those at risk of heart disease and stroke and provide high quality services (cont)

**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**

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HEART DISEASE AND STROKE: Services interventions

POLICY

H31 (cont) Identify those at risk of heart disease and stroke and provide high quality services (cont)

SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE

Treatment and secondary prevention: Surgical and invasive interventions

Coronary heart disease

Angina sufferers are an easily identifiable target group for potential surgical or other invasive interventions for coronary artery problems, which are known to be effective in treating angina.a

The relative effectiveness of Coronary Artery Bypass Grafting (CABG), Percutaneous Transluminal Coronary Angioplasty (PTCA) and medical treatment depends on the severity of the disease, the responsiveness of patients with less severe disease to medical intervention, and is changing as new technologies and techniques are introduced.b

In acute coronary syndromes, emergency PTCA is superior to thrombolysis for short term outcomes, but is only an option in centres with considerable experience.c

Long term low dose aspirin and lipid-lowering reduce the risk of re-stenosis, myocardial infarction, stroke or vascular death in post PTCA and CABG patients.d

REFERENCES

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H31 (cont) Identify those at risk of heart disease and stroke and provide high quality services (cont)

SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE

Treatment and secondary prevention: Surgical and invasive interventions

Stroke

Carotid endarterectomy reduces the risk of stroke in patients with severe carotid artery stenosis who have recently suffered a transient ischaemic attack in the part of the brain supplied by the diseased artery. The operation probably also reduces risk of stroke in asymptomatic patients with carotid artery stenosis, but the overall benefit is small. A variety of surgical techniques are used, but there is insufficient evidence to prefer the use of any particular approach. The risks from surgery are related to a number of patient-specific factors. Taking account of these might help decision making for individual patients.

There is insufficient evidence to judge whether acute surgical interventions for primary intracerebral haemorrhage should be performed.

Elective surgery to prevent sub-arachnoid haemorrhage from intracranial aneurysms is associated with important postoperative mortality and permanent morbidity. A review is exploring the timing of surgery to prevent re-bleeding following a sub-arachnoid haemorrhage.

Systematic reviews about the effects of percutaneous transluminal angioplasty in the treatment of carotid and vertebral artery stenosis found no completed trials.

There is no reliable evidence to suggest that extracranial-intracranial bypass reduces the rate of stroke in comparison to medical management.

REFERENCES


HEART DISEASE AND STROKE: Services interventions

**POLICY**

**H31** (cont) Identify those at risk of heart disease and stroke and provide high quality services (cont)

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**Treatment and secondary prevention: Drug therapies**

**Coronary heart disease**

Use of low dose aspirin in patients at high risk of coronary heart disease is highly cost-effective in terms of cost per life saved. There is no evidence to support the addition of heparin to aspirin therapy in the treatment of myocardial infarction.\(^a\)

Long term beta-blockade following myocardial infarction, with propranolol,

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\(^{a}\) NHS Centre for Reviews and Dissemination. Management of stable angina. Effective Health Care 1997;3(5).


HEART DISEASE AND STROKE: Services interventions

**POLICY**

H31 (cont) Identify those at risk of heart disease and stroke and provide high quality services (cont)

**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**

<table>
<thead>
<tr>
<th>Evidence</th>
<th>Description</th>
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<tr>
<td>timolol and metoprolol, is safe and effective.</td>
<td>Amiodarone may reduce mortality in high-risk patients following myocardial infarction, heart failure or a history of cardiac arrest, but is poorly tolerated by many patients. Most of the benefits are obtained in those with heart failure.</td>
</tr>
<tr>
<td>Class 1 anti-arrhythmic drugs given in the acute phase of myocardial infarction increase mortality and should not be used.</td>
<td>Statins (HMG Co-A reductase inhibitors) reduce blood cholesterol and clinical events (including revascularisations) in patients following myocardial infarction. Statins are effective over a wide range of blood cholesterol levels, including those considered “normal” in Britain.</td>
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<tr>
<td>High-intensity oral anticoagulation (INR 2.8-4.8) in patients with coronary heart disease reduces the risk of recurrence, total mortality and stroke but is associated with a six fold increase of major bleeding. Moderate intensity oral anticoagulation (INR 2-3) reduces the risk of recurrence and stroke (reduction of total mortality is not significant) but is associated with a seven fold increase in major bleeding. Low intensity oral anticoagulation together with aspirin is not superior to aspirin alone. There is currently insufficient evidence to assess the effect of high / moderate intense regimens with aspirin.</td>
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<td>Pooled data from controlled trials of hormone replacement therapy (HRT) do not support the idea that that postmenopausal HRT prevents cardiovascular events. In women with known ischaemic heart disease one large well designed trial failed to detect any reduction in cardiovascular disease events or all cause mortality in those allocated to a minimum of 4 years treatment with HRT. HRT significantly increased the risk of venous thrombosis and gall bladder disease.</td>
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**Heart failure**

Phosphodiesterase inhibitors increase mortality in patients suffering from chronic heart failure. Angiotensin converting enzyme (ACE) inhibitors can reduce left ventricular hypertrophy. In patients with mild or moderate heart failure, beta-blockade reduces mortality but this effect is in addition to benefits obtained by ACE

**REFERENCES**

HEART DISEASE AND STROKE: Services interventions

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<td>H31 (cont) Identify those at risk of heart disease and stroke and provide high quality services (cont)</td>
<td>Inhibitors. The effects on mortality are reduced in sensitivity analyses excluding less robust trials. Patients with severe heart failure may be adversely affected by beta-blockers. It is not clear whether one beta-blocker is better than another, and their effects in older patients and those with more severe heart failure require further study.</td>
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Avezum A, Tsuyuki RT, Pogue J, Yusuf S. Beta-blocker...
HEART DISEASE AND STROKE: Services interventions

**POLICY**

| H31 (cont) | Identify those at risk of heart disease and stroke and provide high quality services (cont) |

**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**

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**Treatment and secondary prevention: Drug therapies**

**Stroke: acute treatment**

In acute stroke, aspirin therapy is safe and reduces the risk of early stroke recurrence and improves long term outcome.\(^a\) Thrombolysis increases risk of death, but reduces dependency in survivors so that, overall, risk of death or dependency is reduced.\(^b\) Indirect comparison of the different thrombolytic agents that have been used in trials suggests that recombinant tissue plasminogen activator is associated with fewer deaths and greater chance of a good outcome (alive and independent).\(^c\) There is no evidence that routine anti-coagulants and calcium antagonists are effective in acute stroke.\(^d\) There have been reviews of several other therapies in acute stroke, but there is insufficient evidence to justify use of any of them outside randomised controlled trials.\(^e\) Nine further reviews are being prepared on other medical interventions for acute stroke.\(^f\)

In subarachnoid haemorrhage, use of nimodipine reduces the risk of a poor outcome (death or dependency), probably through reducing secondary cerebral ischaemia.\(^g\) There is no evidence to support the use of antifibrinolytic therapy.\(^h\) Two reviews are being prepared on other aspects of management of subarachnoid haemorrhage.\(^i\)

Echocardiography can identify cardiac sources of embolus in patients with stroke and clinical evidence of cardiac disease. There is evidence from observational studies that patients with intra-cardiac thrombus benefit from anticoagulation.\(^j\)
Stoke: Secondary prevention

Aspirin has a net beneficial effect in secondary prevention of stroke, despite causing a small increase in risk of haemorrhagic stroke. There is no evidence that higher (eg 300mg per day) doses of aspirin are any more effective than lower doses (eg 75mg per day). The Antithrombotic Trialists' Collaboration is reviewing whether the addition of dipyridamole to aspirin is more effective than aspirin alone. Thienopyridine derivatives (for example clopidogrel and ticlopidine) are effective, but more expensive, alternative for patients who cannot take aspirin. Anticoagulant therapy slightly reduces the risk of recurrence after non-embolic ischaemic stroke or transient ischaemic attack, but this benefit is more than outweighed by a much larger increase in the risk of intracranial haemorrhage (so there is a net hazard).

For patients with atrial fibrillation, warfarin (substantially) and aspirin (moderately) reduce risk of stroke. Warfarin is associated with greater risk of haemorrhage than aspirin. Combining aspirin therapy with warfarin is associated with a further increase in risk of haemorrhage. A review of anticoagulants versus antiplatelet agents in atrial fibrillation is in preparation.

Four further reviews are in preparation looking at the role of antiplatelet agents and anticoagulants in various sub-groups of patients who are at increased risk of stroke.
**HEART DISEASE AND STROKE: Services interventions**

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**HEART DISEASE AND STROKE: Services interventions**

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<td>He J, Whelton PK, Vu B, Klag MJ. Aspirin and risk of</td>
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HEART DISEASE AND STROKE: Services interventions

**POLICY**

H31  
(cont) Identify those at risk of heart disease and stroke and provide high quality services  
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**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**

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Heart Disease and Stroke

Identify those at risk of heart disease and stroke and provide high quality services (cont)

**Rehabilitation**

**Coronary Heart Disease**

Cardiac rehabilitation programmes can improve recovery and survival in patients who have had a heart attack or invasive heart procedure.\(^a\) Programmes combining exercise, psychosocial and educational interventions tend to be more effective, whereas exercise alone may be insufficient to reduce recurrence and mortality.\(^b\) The essential components of a successful service, the duration of rehabilitation required, and effects in different types of patient are all largely unknown. Variation in provision and uptake is considerable.

A review is being prepared examining the effects of exercise programmes for coronary heart disease.\(^a\)

**Stroke**

Observational studies using historical controls suggest that recognising and treating swallowing difficulties in stroke patients will reduce risk of pneumonia.\(^a\) However, there is a lack of evidence available to guide care and feeding of these patients.\(^b\) A review of pharmacological treatments for dysphasia is underway.\(^c\)

There is some evidence that more intensive rehabilitation leads to better outcome.\(^d\)

There is a lack of evidence about the effects of speech and language therapy after stroke.\(^e\)

Other systematic reviews are available or planned looking at specific treatments in stroke rehabilitation.\(^f\) Recent trials have suggested that domiciliary occupational therapy is effective both for stroke patients who stay at home and for those discharged from hospital.\(^g\)

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**REFERENCES**

HEART DISEASE AND STROKE: Services interventions

**POLICY**

H31  
*(cont)* Identify those at risk of heart disease and stroke and provide high quality services *(cont)*

**SYSTEMATIC REVIEWS OF RELEVANT EVIDENCE**


**REFERENCES**

**Service issues**

**Coronary heart disease**

Evaluations show that many patients are not being given appropriate treatment to reduce risks of recurrence, and that access to treatment is often delayed, inadequate and inequitable.\(^a\)

There is also variation in provision of cardiac rehabilitation services.\(^b\)

There is evidence that coronary artery bypass grafting surgery is associated with lower post-operative mortality rates in hospitals operating on more than 100 patients per year, and post-PTCA mortality rates fall with increased operator experience and hospital volumes.\(^c\)
## HEART DISEASE AND STROKE: Services interventions

### POLICY

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</table>
| (cont) Identify those at risk of heart disease and stroke and provide high quality services | **Stroke**  
Organised in-patient care in stroke units leads to better survival, less dependency, and greater likelihood of patients living at home after one year as compared to conventional in-patient care. Stroke unit care is not associated with any increase in hospital length of stay.  
There is no evidence that services which aim to avoid hospital admission for stroke patients can achieve the same benefits as inpatient stroke units.  
Models of care that support early discharge from hospital reduce length of stay, but the effects on patient and carer outcomes and on overall costs of this approach are unclear.  
There are similar uncertainties over the effects of day-hospital rehabilitation.  |

### People can:

| **H32** | Bystander cardiopulmonary resuscitation following sudden cardiac arrest and defibrillator-capable emergency services increases survival.  
No systematic reviews or trials of the effects of training in cardio-pulmonary resuscitation were found.  |
| **H33** Have their blood pressure checked regularly | Intensive programmes of hypertension detection and treatment following protocols, not only reduces cardiovascular mortality, but also narrow social class mortality differences.  |
Ebrahim S. Detection, adherence and control of hypertension for the prevention of strokes: a systematic review.  
Ebrahim S. Health Education Authority, 1996. |
### REFERENCES


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<td>Take medicine as it is prescribed</td>
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<td>Current methods of improving adherence for chronic health problems are mostly complex and not very effective. More studies of innovative approaches to assist patients to follow medication prescriptions are needed.</td>
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