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Proactive case finding and retention and improving access to  
services in disadvantaged areas (Health Inequalities)  
Statins

**Draft report to the National Institute for Health & Clinical  
Excellence**

**Report prepared by the Support Unit for Research Evidence  
(SURE), Cardiff University**

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# 1. Background

Coronary heart disease (CHD) is the largest single cause of death, claiming 37% of the UK total<sup>1</sup>.

The burden of CHD is directly linked to the increasing inequalities health in the UK. The death rate due to CHD among men from manual classes is 40% higher than for non-manual workers. Men of working age in social class V are 50% more likely to die from CHD than men in the population as a whole. The wives of manual workers have nearly twice the risk compared to wives of non-manual workers. There are also ethnic variations. For people born in the Indian sub-continent, the death rate from heart disease is 38% higher for men and 43% higher for women than rates for the country as a whole.

Therefore improving the primary and secondary prevention of cardiovascular diseases in disadvantaged groups will be a significant driver in tackling health inequalities.

Primary prevention of cardiovascular diseases requires identification of patients at high risk and treatment of eligible patients. Secondary prevention also requires identification and treatment of those with established CHD. The National Service Framework for Coronary Heart Disease set standards for general practitioners and primary cares to identify all people with established cardiovascular disease and people at significant risk and offer comprehensive advice and appropriate treatment. The use of statin therapy is recommended for adults with clinical evidence of cardiovascular disease and as part of the management strategy for the primary prevention of CVD for adults who have a 20% or greater 10-year risk of developing CVD<sup>2</sup>.

For effective prevention it is important that once identified, patients access services and comply with their treatment. These are key factors to consider for disadvantaged groups who may face additional barriers such as transport, inconvenient appointment times and language / communication.

This review therefore seeks to address the interventions for finding and supporting adults from disadvantaged populations who are at increased risk of developing CVD or who have CVD. The research questions are as follows:

1. What interventions could PCTs introduce to identify and reach people at increased risk of developing or with established CHD
2. Once identified and reached, how do PCTs support people at increased risk of developing or with established CHD?
3. How can PCTs provide or improve access to services aimed at people at increased risk or with established CHD?

This review has been developed in line with the parameters agreed with the CPHE team at NICE.

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<sup>1</sup> Department of Health. National Service Framework for Coronary Heart Disease. March 2000

<sup>2</sup> NICE. Statins for the prevention of cardiovascular events. 2006

## 2. Methodology

### 2.1 Literature search

#### Bibliographic databases

Database searches were carried out in June 2007 for papers published from 1995 onwards. The following information sources were searched:

AMED (Allied and Complementary Medicine)  
ASSIA (Applied Social Sciences Index and Abstracts)  
British Nursing Index  
CENTRAL (Cochrane Controlled Trials Register)  
CINAHL (Cumulative Index to Nursing & Allied Health Literature)  
Cochrane Database of Systematic Reviews  
DARE (Database of Abstracts of Reviews of Effects)  
Embase  
EPPI-Centre  
Medline  
PsycINFO  
Sociological Abstracts  
Social Policy and Practice  
HMIC  
SIGLE

The search strategy was developed in Medline using a combination of Medical subject headings (MeSH) and keywords. A broad search using MeSH and keywords in the title and abstract was carried out to identify relevant papers for disadvantaged groups and a title only search for relevant papers irrespective of population. For a record of the search strategies used please see Appendix B.

#### Snowballing techniques

Snowballing techniques were employed to identify any further key papers. Authors from key papers, experts known to the team from a previous research project<sup>3</sup> and three email discussion lists<sup>4,5,6</sup> were contacted to check for unpublished studies or papers likely to be relevant to the review. The NICE CPHE team also provided any research identified during the scope consultation exercise.

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<sup>3</sup> Health Evidence Bulletins Wales: Coronary Heart Disease. Cardiff: National Public Health Service for Wales, 2004

<sup>4</sup> [public-health@jiscmail.ac.uk](mailto:public-health@jiscmail.ac.uk)

<sup>5</sup> [evidence-based-medicine@jiscmail.ac.uk](mailto:evidence-based-medicine@jiscmail.ac.uk)

<sup>6</sup> [public-health-intelligence@jiscmail.ac.uk](mailto:public-health-intelligence@jiscmail.ac.uk)

Reference lists of papers were checked to identify any further studies.

The following websites were also searched by the team at Cardiff in addition to those searched by CPHE team:

European Directory of Good Practices to reduce health inequalities

[http://ec.europa.eu/health/ph\\_projects/2003/action3/action3\\_2003\\_15\\_en.htm](http://ec.europa.eu/health/ph_projects/2003/action3/action3_2003_15_en.htm)

Community Development Xchange [www.cdx.org.uk/](http://www.cdx.org.uk/)

WHO Health Evidence Network <http://www.euro.who.int/HEN>

NHS networks [www.networks.nhs.uk/](http://www.networks.nhs.uk/)

Department of Health Coronary Heart Disease policy section

<http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/Coronaryheartdisease/index.htm>

## **2.2 Selection of Studies for Inclusion**

References generated from the searches were imported into Reference Manager and duplicates were excluded.

One reviewer sifted title and abstracts to exclude clearly irrelevant studies. It was anticipated that relevant outcomes, interventions and disadvantaged populations may not all be reported in the abstract. Thus, potentially relevant interventions were examined in full-text irrespective of any mention of population type in the abstract. The full-text of abstracts of community cardiovascular prevention/education programmes were also checked to determine whether they employed an element of reaching / identifying those at risk.

The reference lists of each full article or report for each abstract identified as relevant were screened by one reviewer to identify further potentially relevant papers. The final inclusion criteria (see below) were then applied by one reviewer to each identified paper.

Please note that a NICE clinical guideline on cardiovascular risk assessment is currently under development (due for publication 2007), therefore studies investigating the effectiveness of different risk assessment tools are not included in this review.

The inclusion criteria were developed in collaboration with the CPHE team at NICE.

### **Population**

Only adults aged 16 or over and at increased risk of developing CHD or with established CHD were included. The review focussed on interventions in disadvantaged groups (to include social deprivation, manual workers, low income, lone parents and poor families, people on benefits and living in public housing, people with mental health problems or learning disabilities, people who are institutionalised and black and minority ethnic groups). Information was drawn from generic populations where research was scarce.

### **Studies**

All intervention studies (including RCTs, non randomised controlled trials, controlled before and after, uncontrolled before and after, interrupted time series, and evaluations), observational research and qualitative research were considered eligible whether

published or unpublished. Relevant non-systematic literature reviews, discussion papers, letters or editorials were unpicked for individual studies meeting the inclusion criteria.

Animal studies, papers only available as abstracts and studies with less than 10 participants were excluded. If the results of relevant primary studies were reported in an included systematic review, they were excluded.

**Countries**

The review included studies involving disadvantaged groups in all countries belonging to the Organisation for Economic Cooperation and Development (OECD).

Where research was scarce, the review drew on all identified UK studies irrespective of population focus. Research from other OECD countries was also included if the UK literature was limited. For generalisability, non-OECD countries were excluded.

**Interventions and Outcomes**

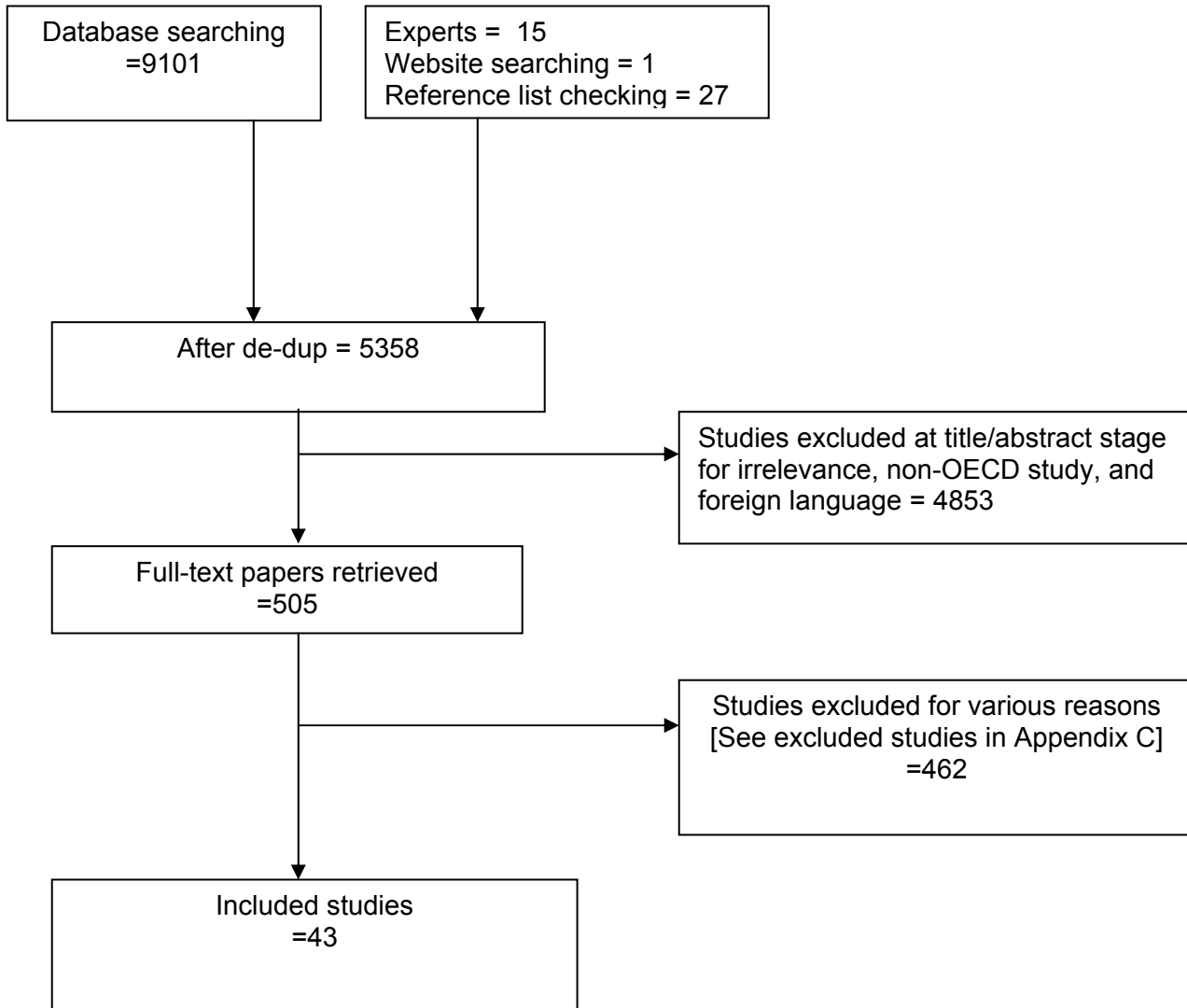
Question specific criteria for interventions and outcomes are shown in the table below:

<b>Included</b>	<b>Excluded</b>
<p><b>Question 1</b></p> <p>Interventions to identify patients at risk or with established CHD. Enablers/barriers</p> <p><u>Eligible outcomes</u> Papers must report one of the following outcomes:</p> <ol style="list-style-type: none"> <li>1. Measure of identifying those at risk/with CHD, i.e.:           <ul style="list-style-type: none"> <li>• Number identified with coronary risk factors</li> <li>• Number identified with uncontrolled risk/CHD</li> <li>• Previously undetected risk/CHD</li> <li>• Risk assessment recorded</li> <li>• Referrals to services / medication prescribed due to detection of risk</li> </ul> </li> <li>2. Participation with interventions to identify risk</li> <li>3. Patient / practitioner views on enablers/barriers to identifying/diagnosis of those at risk/with established CHD</li> </ol>	<p>Epidemiological studies examining extent of the problem, associations between different factors and CHD risk.</p> <p>Effectiveness of CHD screening tools or tests.</p> <p>CHD prevention or promotion programmes without an element of identifying patients at risk of CHD</p>

<p><b>Question 2</b>  Interventions to improve compliance with statins / lipid lowering therapy.  Interventions regarding the retention of patients within services.  Enablers/barriers</p> <p><u>Eligible outcomes</u>  Papers must report one of the following outcomes:</p> <ul style="list-style-type: none"> <li>• Statin/lipid lowering medication compliance: medication use, self-reported compliance, pill counts, prescription renewals/filling</li> <li>• Service attendance or appointment adherence</li> </ul>	<p>General medication compliance studies which do not report results separately for patients with CHD and/or receiving lipid lowering therapy.</p> <p>Effectiveness of different treatments for people with CHD or at risk of CHD, such as comparing effectiveness of different blood pressure lowering treatments</p>
<p><b>Question 3</b>  Interventions to encourage uptake / access to health care services. These could include physical models such as location of services (e.g. health clinics in supermarkets) outreach services and interventions examining the people who can deliver services (e.g. community pharmacists, providing transport to services).</p> <p>Enablers and barriers</p> <p><u>Eligible outcomes</u>  Must include one of the following measures of service uptake/access:</p> <ul style="list-style-type: none"> <li>• Completion/booking of appointments</li> <li>• Service use / enrolment</li> <li>• Treatment rates</li> <li>• Patient/practitioner views on enablers/barriers to access</li> </ul>	



### Flow Chart for Study Selection



## 2.3 Quality Appraisal

Critical appraisal was carried out by one reviewer per paper and checked by a second. The appropriate critical appraisal checklists and quality ratings were used following the processes outlined in the NICE public health methods manual (<http://www.nice.org.uk/page.aspx?o=phmethods>). The controlled before and after checklist was adapted to assess the quality of uncontrolled before and after studies.

A number of studies were identified that did not meet traditional study designs (such as RCTs, before and after studies, cohort studies etc). An inclusive approach was taken whereby all studies without a recognisable study design were referred to as case studies. A checklist for appraising such studies were not available in the NICE public health methods manual, so a written commentary was made during data extraction highlighting quality concerns for each study.

Quality was graded according to the following system:

++	All or most of the criteria have been fulfilled. Where they have not been fulfilled the conclusions of the study or review are thought <b>very unlikely</b> to alter.
+	Some of the criteria have been fulfilled. Those criteria that have not been fulfilled or not adequately described are thought <b>unlikely</b> to alter the conclusions.
-	Few or no criteria fulfilled. The conclusions of the study are thought <b>likely or very likely</b> to alter.

## 2.4 Data Extraction

Data extraction was conducted by one reviewer per paper and checked by a second. The data extraction form outlined in the CPHE Methods Manual was used to extract data on participants, interventions and relevant outcomes. If reported in the study, a breakdown was recorded on the study participants age, gender, race, and socioeconomic background. The location and deliverers of the interventions were also extracted where reported.

## 2.5 Assessing Applicability

The study location, the study population and quality of the study were all considered for study applicability. The most generalisable information available for each question was included by focusing the review on OECD studies of disadvantaged groups. Where evidence was limited, studies of general populations within the UK and/or OECD countries outside the UK were also included as described above.

## **2.6 Data Synthesis**

There was a large degree of heterogeneity in terms of interventions, settings, and populations so a narrative synthesis of the results was carried out. Results are presented in the form of evidence tables (see appendix A) and described narratively in the text.

According to the terminology used by the authors coronary heart disease and cardiovascular disease are used interchangeably in presentation of results.

## 3. Summary of findings

### 3.1 Overall summary of studies identified

The National Institute for Health and Clinical Excellence was asked by the Department of Health to produce guidance for the NHS on public health interventions aimed at reducing the rate of premature death (defined by ONS as death before the age of 75) in disadvantaged areas.

The aim of the review was to interrogate the literature for interventions aimed at finding and supporting adults from disadvantaged populations who are at increased risk of developing CVD or who have CVD. The research questions were as follows:

- What interventions could PCTs introduce to identify and reach people at increased risk of developing or with established CHD
- Once identified and reached, how do PCTs support people at increased risk of developing or with established CHD?
- How can PCTs provide or improve access to services aimed at people at increased risk or with established CHD?

A total of 43 studies were included that addressed interventions to identify, support and improve access to services for people at risk of developing or with established coronary heart disease (CHD). Some studies were applicable to more than one question, therefore there were 22 studies applicable to question 1, 7 studies for question 2 and 16 studies for question 3.

For question one, a total of 22 studies were identified that addressed interventions to identify people from disadvantaged populations who were either at an increased risk of developing CHD or were already diagnosed with CHD.

Two randomised controlled trials (RCTs) and one controlled before and after study (CBA), and were identified (2 RCTs [+]Feder et al 1999, Krieger et al 1999, 1 CBA [-] O'Loughlin et al 1996).

The remainder comprised of one qualitative study ([++] Wright et al 2007) and 18 case studies (9 [+] Bader et al 2006, Byers et al 1999 Chatterjee 1997, Hamilton et al 1997, Haw et al 2004, Huckerby et al 2006, Lacey et al 2004, Macnee et al 1996, Osborn et al 2003. 9 [-]Ahktar et al 2001, Biswas et al 1997, Davis et al 1996, Kirkpatrick 2004, Margolis et al 2003, Molokhia 2000, [-] Oexmann et al 2001, Will et al 2004, Williams et al 2001.)

Studies were diverse in terms of the interventions, outcomes measured, study design and populations. The variation in relevant outcome measures included prevalence of risk factors, referrals to healthcare services, participation rates with interventions, previously undetected risk/presence of CHD, and recording of risk factors.

The studies fell into three broad categories: practice-based initiatives, community based and multi-faceted interventions involving an element of cardiovascular risk assessment.

The identified studies considered the following populations: people from socially deprived areas, ethnic groups, people with mental health problems, homeless people, prison inmates and manual workers.

For many of the papers (particularly for multiple-intervention studies) the primary purpose was not to examine the effectiveness of interventions to improve the identification of patients at cardiovascular risk. Whilst several interventions included patient referral for those at risk, studies did not always report the numbers referred or the referral outcomes. The few studies that attempted to measure referral outcomes were unsuccessful in the following up of all patients.

No firm conclusions can be made from the identified literature for interventions to improve the identification of people with or at risk of CHD, however a number of promising initiatives were found. These include inviting specific populations to attend screening at their general practice, community blood-pressure measurements, workplace screening, the addition of cardiovascular screening to breast and cervical cancer programmes and culturally sensitive education sessions that include cardiovascular risk assessment. However, further well-designed research is required to determine the cost-effectiveness and transferability of such initiatives. One qualitative study ([++] Wright et al 2006) of service users with severe mental illness, and primary care staff and community mental health teams, identified a range of perceived obstacles to CHD screening. However, there was some disagreement about the best way to deliver appropriate care.

For question two (supporting patients once identified as being at risk or with CHD), only one study in disadvantaged groups was identified, which evaluated an intervention to improve patient compliance with statins/lipid lowering therapies or retention within services. No primary UK studies were identified in generic populations. Therefore research conducted in OECD countries for all population types was considered.

With these broader inclusion criteria, a total of seven studies were identified that addressed interventions to improve patient compliance with statins or lipid-lowering medication (SR [+] Beswick et al 2004, 2 RCTs [-] Faulkner et al 2000, Guthrie 2001, Lopez-Cabezas et al 2006, UBCA [-] Ali 2003, 2 observational [-] Bluml et al 2000, Muhlestein et al 2001).

The literature suggests there is a paucity of good quality research on this topic, particularly in disadvantaged areas. The following interventions were examined, pharmacist initiatives, telephone reminders, patient education and in-hospital prescription of statins. The studies were however methodologically flawed and the applicability to disadvantaged populations is limited. There was also a lack of research regarding the retention of patients within services. Just one systematic review ([+] Beswick et al 2004) was identified on adherence to cardiac rehabilitation. It found some promising results for self-management techniques based around individualised assessment, problem solving, goal setting and follow-up. However, the authors concluded that there were few studies of sufficient quality to make specific recommendations of methods to improve adherence to outpatient cardiac rehabilitation and its components.

For question 3, sixteen studies were identified that looked at access to services aimed at people at increased risk or with established CHD in disadvantaged populations. UK research in generic populations was also considered but this did not result in any further eligible studies.

Evidence regarding the effectiveness of interventions to improve access was reported in five studies (SR [+] Beswick et al 2004, 2 RCTs [+] Feder et al 1999, Krieger et al 1999, 2 CS [+] Manson-Siddle et al 1999, Lacey 2004)

The four primary studies indicated the importance of providing additional staff resources to encourage or support the uptake of services in people living in socially deprived areas. Evidence from one RCT suggested that, in an area of deprivation, postal prompts to patients and their GPs following an acute coronary event, improves the likelihood of the patient having at least one consultation with their GP or nurse ([+] Feder et al 1999). The systematic review ([+]Beswick et al 2004) highlighted the need for trials of interventions applicable to all patients and targeting specific under-represented groups.

Evidence from ten qualitative studies identified a number of enablers and barriers for addressing service uptake in ethnic groups, people living in socially deprived areas and older people (2 [++] Netto et al 2007, Tod et al 2001, 7 [+] Clark et al 2002, Higginbottom 2006, Lindesey 1997, Macintosh 2003, Tod et al 2002, Richards et al 2003, Vishram et al 2007, 2 [-] East et al 2004, Naqvi 2003)

The following issues were highlighted: flexible services, transport, personal views, awareness or understanding of services and treatment, religious and cultural issues, one-to-one care/group care, patient communication problems and the absence of services or long waiting lists. It was not possible to tell from the literature how strong an impact addressing these barriers would have on improving service uptake.

### **3.2. Key Question 1**

#### **What interventions could PCTs introduce to identify and reach people at increased risk of developing or with established CHD?**

A total of 22 studies were identified that addressed interventions to identify people from disadvantaged populations at increased risk of developing CHD/ with established CHD

Two randomised controlled trials (RCTs) one controlled before and after study (CBA), and were identified (2 RCTs [+]<sup>Feder et al 1999, Krieger et al 1999</sup>, 1 CBA [-]<sup>O'Loughlin et al 1996</sup>).

The remainder comprised one qualitative study ([++] <sup>Wright et al 2007</sup>) and 18 case studies (9 [+]<sup>Bader et al 2006, Byers et al 1999 Chatterjee 1997, Hamilton et al 1997, Haw et al 2004, Huckerby et al 2006, Lacey et al 2004, Macnee et al 1996, Osborn et al 2003</sup>. 9 [-]<sup>Ahktar et al 2001, Biswas et al 1997, Davis et al 1996, Kirkpatrick 2004, Margolis et al 2003, Molokhia 2000, [-] Oexmann et al 2001, Will et al 2004, Williams et al 2001</sup>.)

The relevant outcomes measures varied including prevalence of risk factors, referrals to healthcare services, participation rates with interventions, previously undetected risk/ presence of CHD, and recording of risk factors. Interventions fell into three broad categories: practice based, community based and multi-faceted interventions including a component to identify those at risk/ with CHD. One study considered barriers to identifying people at risk or with CHD.

The identified studies considered the following populations: people from socially deprived areas, ethnic groups (including Afro-Caribbean, Turkish immigrants, Black communities, Yemeni, Muslim, Sikh, and Asian), people with mental health problems, homeless people, prison inmates and manual workers.

For many of the studies (particularly the multiple intervention studies) the primary purpose of the study was not to examine the effectiveness of interventions to improve identification of patients at cardiovascular risk, but considered wider coronary heart disease prevention such as risk reduction. Whilst several interventions included patient referral for those identified at risk, papers did not always report the numbers referred or the referral outcomes. The few studies that attempted to measure referral outcomes were unsuccessful in following all patients.

#### **3.2.1 Practice-based initiatives**

One moderate quality RCT ([+] <sup>Feder et al 1999</sup>) found postal prompts to patients following an acute coronary event and to their general practitioners (GPs), improved monitoring of patients' risk. Patients received prompts with secondary prevention advice and suggestions to make an appointment for review with their GP or practice nurse. GPs were sent reminders about effectiveness interventions and local CHD guidelines. A higher proportion of intervention patients had risk factor measurements recorded for cholesterol, weight and smoking but there was no difference in recording of blood

pressure measurement. Intervention patients were also more likely to have at least one consultation with their GP or nurse (OR 2.1 95%CI 1.1 to 3.9,  $p < 0.05$ ).

One moderate quality case study ([+] Lacey et al 2004) considered the impact of an intervention funding one nurse and one exercise worker to facilitate better care by primary care staff. The project nurses worked directly with practice nurses and GPs to develop their skills in identifying and monitoring patients with CHD, giving lifestyle advice and ensuring optimum medication regimes. The exercise worker worked with practices and the community to identify and facilitate the provision of exercise facilities suitable for CHD patients. As part of the evaluation, general practice patients were surveyed to determine the impact on recording of blood pressure and cholesterol measurements. There were no differences in the reporting of blood pressure measurements, however cholesterol tests were reported by 77.8% of the intervention group and 72.5% of the control group ( $p = 0.002$ ). Statins were more likely to be taken by intervention group patients than controls (50.9% vs. 44.2%,  $p = 0.031$ ) and beta-blockers were more likely to be taken by controls 40.4% vs 31.3%,  $p = 0.003$ ).

Three case studies ([+] Osborn et al 2003, [+] Macnee 1996, [-] Akhtar 2001) investigated the effectiveness of inviting specific population groups for screening:

One UK case study ([+] Osborn et al 2003) suggested there is no significant difference in participation between patients with or without psychosis with cardiovascular risk assessment offered at the patient's general practice. 75 out of 182 invited patients with psychosis, participated in screening (41.2%) compared to 150 of 313 patients without psychosis (47.9%). The odds ratio was 0.76 (95%CI 0.53 to 1.10)  $p = 0.15$ . Outcomes of the risk assessments are not reported.

One moderate quality US case study [+] Macnee 1996) examined the effectiveness of screening clinics for homeless people offered by faculty and baccalaureate-nursing students at a primary care clinic. Five different types of screening were offered including hypertension screening. 214 clients attended at least one type of screening clinic during the 9 months of the study. Almost a third (27%) of the 131 participants attending hypertension screening was identified as having abnormal results and 77% of those received follow-up. Whilst the clinics were successful in attracting previous and new clients of the clinic, it is unclear exactly how these people were recruited.

One poorly reported and hence low quality UK case study ([-] Akhtar 2001) showed promising results for an intervention inviting all South Asian men in a GP practice aged 40 or more for screening sessions. The sessions were provided by a district nurse and health promotion facilitator. Of the 159 patients participating in the screening, 52 (32%) were identified as having undiagnosed hypertension. 42 (26%) patients were identified as having a risk factor of over 30% over the next 10 years. A further 101 (63%) had a risk factor less than 15% and a follow-up appointment was made in one year's time. The actual participation rate with the screening is unclear. 159 of 369 patients invited participated (43%), yet the authors state that 159 of 196 patients 'seen' participated (81%) without further explanation of what 'seen' refers to.

Evidence from one UK case study ([+] Haw et al 2004) suggested that screening 64 long-term psychiatric hospital patients identified one new case of established CHD and 22 participants with previously undetected test abnormalities. Whilst 64 of the potential 97 patients agreed to participate in the study (66%), participation with the individual



measures varied, with just 36 (37%) of the 64 participants consenting to have blood tests.

There is low quality evidence from two UK case studies ([-] Molokhia 2000, [-] Davis et al 1996) to suggest that offering cardiovascular risk assessment on an opportunistic basis to Afro-Caribbean general practice patients or patients from a range of socioeconomic categories may identify a number of people at risk of CHD. However the interventions require further research from well designed studies before firm conclusions can be drawn.

One small poor quality case study ([-]Molokhia 2000) suggests that participation in cardiovascular risk assessments offered to Afro-Caribbeans GP attenders was high. 98 of the 107 invited (92%) participated and 50% of patients were identified as having at least two risk factors for cardiovascular disease. Whilst the results are promising, they should be viewed with caution owing to the lack of information on the study objectives, sampling, data collection, methods of analysis and patients' reasons for attending the practice. Whilst a GP conducted the risk assessments it is not clear for what purpose. There is no information regarding action taken in those with coronary risk factors, and the study objectives are ambiguous.

One large poor quality retrospective data-analysis ([-] Davis et al 1996) of the Be Better Hearted (BBH) CHD health promotion programme in which individual cardiovascular risk assessment with advice and follow-up was offered opportunistically in a primary care setting . Of the 20,053 patients participating over the 4.5 year period, 41% were referred to a nurse or dietician and 6% for to a GP. The 20053 participants represented 15% of the Forth Valley target population. However, when the attendance rate was calculated according to socioeconomic categories, a statistically significant inverse relationship was found with uptake by 19% of the resident population in the most affluent category and by only 10.7% in the two most deprived categories ( $p < 0.001$ ).

Owing to the very poor quality of a US case study ([-]Kirkpatrick et al 2004) no firm conclusions can be drawn on the feasibility of a primary care physician performing hand-carried cardiac ultrasound examinations on attendees of an urban clinic for underserved minority patients.

### **3.2.2 Community-based Interventions**

Seven studies evaluated community initiatives to identify people at risk or with established CHD. The interventions involved workplace screening, prison screening and screening in community sites. Further community initiatives were part of multi-component interventions and are described in section (3.2.3)

Evidence from one poor quality CBA ([-]O'Loughlin et al 1996) and two case studies ([+]Chatterjee 1997, [-] Margolis 2003) suggest that workplace screening is fairly well attended and that a number of participants were identified for referral to physician follow-up:

One poor quality Canadian CBA study ([-]O'Loughlin et al 1996) offered CVD risk factor screening to school employees based in a low-income multi-ethnic area in Canada. Participation was adequate, with 125 (59.8%) of the 209 workers who completed baseline measures participating in the screening (or 44.4% of the 286 eligible staff). The screening identified 28.0% attendees for referral to a physician for cholesterol follow-up and 5.6% for blood pressure follow-up.

In a large moderate quality UK case study ([+]Chatterjee 1997) workers from a factory in the UK were offered cardiovascular screening by occupational health nurses. Participation was modest (40% of the workforce participated). The authors concluded that the health profile of the employees was better than that of the general population. 2.4% participants had high cardiac risk scores and 7.8% had medium risk scores. 4.0% and 2.2% women had 'referral category' or 'high blood pressure' and 17% men and 7.2% women had 'observation' or 'borderline blood pressure'. It was not reported whether these were previously undetected. Employee's GPs were posted a copy of the screening results highlighting any abnormal finding, but follow-up outcomes are not provided.

One poorly reported US case study ([-]Margolis et al 2003) recruited African American businesses in low-income areas to host cardiovascular screening for their employees. 14 sites hosted screenings covering 30 businesses and an estimated 252 employees. 107 employees (42%) participated in the screening, but the results are only reported for the 98 African American workers. Among those workers, a high number were identified as being at risk (53 individuals - 54%) and offered a free follow-up visit to a physician. Uptake was relatively low with 22 individuals completing a physician follow-up (remaining were lost to follow-up or declined). The study lacks sufficient detail regarding the sampling and recruitment of businesses and the rationale for only reporting results for African American participants.

Due to the poor quality and lack of detail reported in an uncontrolled before and after study US ([-] Williams et al 2001), no firm conclusions can be made on whether continuous interaction with prevention-focused, advanced practice nurses change the response level of a minority worksite employee group to CVD screening programs. Day care workers participation with CVD screening increased from 26% in 199 to 73% in 1997 following the establishment of long-term relationships built on culturally appropriate strategies. However insufficient detail regarding the recruitment of participants makes it difficult to evaluate the effect of the intervention, which is further limited by the lack of control group; meaning other variables may have had an impact on participation rates.

Evidence from one UK case study ([-] Biswas et al 1997) evaluating the establishment of a health screening clinic in a prison, indicates a moderate 35% voluntary uptake the Well Man Clinic service by the inmates. There were active interventions following the screening for 87 (34%) inmates and 13 (32%) staff screened. These ranged from simple anti-smoking and dietary advice to more formal medical interventions to manage raised blood pressure and cholesterol. The authors were encouraged that over a third of the inmates voluntarily took advantage of the service, from a population that is historically not noted for taking an interest in their personal health. However, it is not clear how the uptake rate was determined, as the number of potential participants has not been provided.

Two studies evaluated the provision of blood pressure measurement at community sites (case study [+] Hamilton 1997 and RCT [+] Krieger 1999). The small body of evidence showed promising results in terms of reaching and identifying people at risk:

Evidence from one UK case study ([+] Hamilton 1997) evaluated the feasibility of placing self-reading sphygmomanometers in areas of deprivation in public sites such as post-offices, charity shops, homeless centres and supermarkets. 769 first time users were identified over a 146 machine week period, of whom 758 completed a proforma fully writing down their blood pressure. 221 readings were above the action level. The study was unable to contact all users with elevated readings but, of the 58 who consented to access to their GP records, 36 had a blood pressure measurement recorded in their GP notes after their use of the machine. Eleven new hypertensives were identified (defined by primary care measurements above 150/100mmHg), 1.4% (95%CI 0.7 to 2.5) of the 769 total first time users. The authors conclude that open access sphygmomanometry for detection of hypertension is feasible but before recommending wider implementation they recommend further research to see if the results are transferable to other settings, and, whether this approach reduces inequalities and is cost effective.

One moderate quality US RCT ([+] Krieger et al 1999) provided blood pressure measurements at a range of sites (including shelters and missions, public libraries, grocery and retail stalls) by community health workers. The purpose of the measurements appears to be to identify people eligible to participate in the RCT. 4761 people received blood pressure measurements, of whom 31.4% had elevated blood pressure ( $\geq 140/90$  mmHg) and 10.7% ( $\geq 160/100$  mmHg) had moderate or severely elevated blood pressure. No firm conclusions can be drawn on the level of uptake as neither the time frame nor the potential number of participants is reported. 738 people with elevated blood pressure were eligible to participate in the RCT, which aimed to examine the impact of tracking and outreach to improve patient follow-up with their physician. See question 3 and the evidence table (Appendix A) for these results.

### **3.2.3 Multi-component interventions including cardiovascular risk assessment**

Five studies included an element of risk factor assessment as part of larger multi-component interventions.

Two studies (case study [+] Byers et al 1999, case study [-] Will et al 2004) were large evaluations of different phases of the Well-Integrated Screening and Evaluation for Women Across the Nation, the WISEWOMAN project. WISEWOMAN added free CVD screening to state breast and cervical cancer screening programmes, provides monies for confirmation of abnormal results and an annual follow-up examination, and examined the effectiveness on risk factor reduction of providing either minimum intervention (on-site education, referral and follow-up) or enhanced intervention (activities to improve nutrition and physical activity). Byers et al ([+]1999) provides screening results for phase 1 of the project (in Massachusetts, Arizona and North Carolina) initiated in 1995. Will et al ([-] 2004) provided screening results for phase 2 beginning in 1999 after expansion of the number of projects.

The evaluation of phase 1 (case study [+] Byers et al 1999), reported that 4842 screenings were conducted revealing a high prevalence of CVD risk factors. High cholesterol ( $\geq 240$  mg/dL) was more identified in 40% of women screened in North Carolina, 40% in Massachusetts, and 29% in Arizona. Hypertension ( $\geq 140/90$  mmHg) was found in 63% of women in North Carolina, 47% in Massachusetts and 34% in Arizona. The study does not report how many women were offered screening or who was referred for follow-up care. The authors concluded that it was appropriate to expand breast and cervical cancer screening programmes to include screening for CVD, and the WISEWOMAN projects had been successful in reaching financially disadvantaged and minority women at high risk for chronic diseases.

The evaluation (case study [-] Will et al 2004) of phase two of WISEWOMAN reported that during 2002, 8164 women were screened and a high prevalence of risk factors was identified. 23% of women had high total cholesterol ( $\geq 240$  mg/dl) of these 48% were newly diagnosed. 38% of women had high blood pressure, of these 24% were newly diagnosed. 75% of participants were overweight or obese and in some sites up to 42% were smokers. The authors conclude the WISEWOMAN projects had been successful in reaching financially disadvantaged and minority women who are at high risk for chronic diseases. The results were poorly reported however. Summary data for all 8164 is only reported in the abstract and not the text. Regional results in table 3 are reported as percentages and the authors state that, because of missing responses, denominators vary (although they also mention that most variables had few missing responses).

Applicability and transferability of these programmes to a UK setting requires further study.

Three studies showed promising results for culturally sensitive education sessions that include an element of cardiovascular risk assessment (case studies [+] Huckerby et al 2006, [+] Bader et al 2006, [-] Oexmann et al 2001):

One small UK case study ([+] Huckerby 2006) suggests culturally adapted pharmacist-led group sessions with black and other minority community groups may be of value. The sessions aimed to raise awareness of medicines through educational presentations, and also offered medication reviews including blood pressure monitoring with follow-up or referral. 70 medication reviews were conducted out of the total 125 attendees (56%). Of these 29% revealed patients with uncontrolled hypertension. These patients were given advice and referred to their GP, practice-based pharmacist or practice nurse, but follow-up data were not measured. The study attempted to gather patient feedback by evaluation forms, but this proved unsuccessful. Verbal feedback was positive and participants also expressed an interest in cholesterol measurements. Physician follow-up data is not reported.

One moderate quality study ([+] Bader et al 2006) evaluated the 'Mosque Campaign' – a culture-sensitive and language adapted pilot prevention program for female Turkish immigrants in Austria. Sessions were provided by a female second year resident physician and female Turkish medical students working as community interpreters. The sessions were provided at 28 Mosques and repeated three times. They consisted of CVD risk factor education, prevention opportunities, medical consultations and blood pressure measurement. The authors noted the large number of participants which clearly showed the women were willing to participate. Over the total three year period 2446 immigrants attended and 1992 had blood pressure measurements. The authors

concluded that despite Austria's free access to healthcare services, a large number of women were not aware of their CVD risk factor levels, that the Campaign reached the female Turkish migrants and was effective in reducing their unawareness about CVD.

Religious settings were also employed in a case study of a US church-based intervention entitled 'Lighten Up' ([-] Oexmann et al 2001). The intervention aimed to reach the medically underserved in North Carolina and South Carolina and consisted of a baseline health check, eight educational sessions, a short-term health check and a long-term health check. At baseline participants had the following significant modifiable risk factors for heart disease: obesity (73%), high blood pressure (55%), high cholesterol (48%) and diabetes (19%). Half or more sessions were attended by 70% of participants. The primary focus of the study was to test the impact of the intervention on risk reduction. Therefore, the study may have limited relevance to this review as it is unclear whether the health checks were part of the intervention and a method of identifying those at risk, or just a way of measuring the impact of the educational sessions.

### **3.2.4 Enablers or barriers to identifying people at risk or with established CHD**

One well-conducted UK qualitative study ([++} Wright et al 2006) was identified which explored views of people with severe mental illnesses (SMI) and primary care and community mental health staff on screening for CHD risk factors and interventions for primary prevention of CHD. The most commonly perceived obstacles to CHD screening were:

- Lack of appropriate resources in existing services
- Anticipation of low uptake rates by patients with SMI
- Perceived difficulty in making lifestyle changes amongst people with SMI
- Patients dislike having blood tests
- Lack of funding for CHD screening services or it not being seen as a priority by Trust management

There was some disagreement about the best way to deliver appropriate care. Although staff felt that primary care should take responsibility for risk factor screening and management, patients favoured CHD screening in their CMHT. Problems with both approaches were identified. These included a lack of familiarity in general practice with SMI and antipsychotic side effects and poor communication of physical health issues to the CMHT. Lack of knowledge regarding risk factor screening and difficulties in interpreting screening results and implementing appropriate interventions exist in secondary care. The authors conclude that increased risk of CHD associated with SMI and antipsychotic medications requires flexible solutions with clear lines of responsibility for assessing, communication and managing CHD risks.

### 3.2.5 Summary for different disadvantaged groups.

The identified studies described in detail above considered the following populations: people who are deprived or living in deprived areas, ethnic groups (including Afro-Caribbean, Turkish immigrants, Black communities, Yemeni, Muslim, and Sikh, Asian), people with mental health problems, homeless people, prison inmates and manual workers.

A brief overview of the interventions found according to these groups are summarised below. Full details of each study have been reported in the previous section and are also described in the evidence tables (appendix A):

#### Social deprivation

- One UK RCT of postal prompts to patients and GPs in a disadvantaged area ([+] Feder et al 1999).
- One RCT linking blood-pressure measurement in various of community sites in a deprived area with a tracking and outreach intervention by community health workers to improve physician follow-up ([+] Krieger 1999).
- One CBA of school worker cardiovascular risk factor screening in Canada ([-] O'Loughlin et al 1996).
- Two case studies of the US WISEWOMAN project for financially disadvantaged women adding free CVD screening to breast and cervical cancer screening ([+]Byers et al 1999 [-] Will et al 2004).
- One UK case study evaluating the provision of open-access self-reading sphygmomanometers in public sites in deprived areas ([+] Hamilton 1997).
- One poor quality case study using retrospective data analysis of the results of opportunistic risk factor assessments in 43 general practices ([-] Davis et al 1996).
- One very poor quality US case study testing the feasibility of a physician using a hand-carried cardiac ultrasound device to screen patient's attending a clinic in an impoverished area ([-] Kirkpatrick et al).
- One case study evaluating a project whereby a nurse and exercise worker support general practices in identifying people at risk and providing cardiac rehabilitation services ([+] Lacey et al 2004).

#### Ethnic groups

- One small UK case study of cardiovascular risk assessment offered opportunistically to Afro-Caribbean patients attending their general practice ([-] Molokhia 2000).
- One US case study of worksite cardiovascular screening in African American businesses ([-] Margolis 2003)
- One very poor quality UBCA examining the impact of long-term relationships built upon culturally appropriate strategies of screening minority workers in day-care centers in the US ([-] Williams et al 2001).
- One small moderate quality case study in the UK of culturally-adapted pharmacist-led group sessions in specific black and minority community groups to raise awareness of medicines and offered medication review including blood pressure monitoring and follow-up/referral. Sessions were held with Yemeni, Muslim,

Caribbean and Sikh community groups. Moderate participation with medication reviews ([+] Huckerby 2006).

- One moderate quality study evaluated the 'Mosque Campaign' – a culture-sensitive and language adapted pilot prevention program for female Turkish immigrants in Austria ([+] Bader et al 2006)
- One large but poorly reported UK case study inviting South Asian male GP patients for cardiovascular risk assessment ([-]Ahktar 2001).
- One US case study providing health checks and patient education at churches. 64% of participants were Black ([-]Oexmann et al 2001).

#### People with mental health problems

- One study inviting general practice patients with/without psychosis to participate in screening. Participation modest in both groups. No significant difference in participation with cardiovascular risk assessment between patients with or without psychosis ([+]Osborn et al 2003).
- One study screening long-stay psychiatric hospital patients. One new case of established CHD and 22 participants with previously undetected test abnormalities. ([+] Haw 2004).
- One qualitative study explored patients preference explored views of people with severe mental illnesses (SMI) and primary care and community mental health staff on screening for CHD risk factors and interventions for primary prevention of CHD ([++] Wright et al 2006).

#### Homeless people

- One US case study evaluating the use of screening clinics for homeless people provided by faculty and baccalaureate-nursing students, at a primary care clinic ([+] Macnee 1996).

#### Prison Inmates

- One UK case study evaluating the uptake of cardiovascular screening by prison inmates, following the establishment of a health screening clinic (Well Man Clinic) at the prison ([-] Biswas et al 1997).

#### Manual workers

- One large moderate case study of cardiovascular risk assessments delivered by occupational health nurses, for workers at the Ford Car company ([+] Chatterjee 1997).

### 3.2.6 Draft Statements

No.	Statement
<b>Identifying and reaching people at increased risk of, or with established CHD</b>	
1.	<p>There is evidence from three case studies suggesting interventions inviting specific populations (South Asians, homeless people or patients with psychosis) to attend risk screening at their GP practice or primary care clinic may identify a number of people at risk of coronary heart disease (outcomes reported in two case studies [+]<sup>1</sup>, [-]<sup>2</sup>). Although it is difficult to draw firm conclusions on how well such interventions are attended due to poor reporting of participation rates (outcomes reported in three case studies [+]<sup>1</sup>, [-]<sup>2</sup> [+]<sup>3</sup>).</p> <p>1 Macnee et al 1996 2 Ahktar et al 2001 3 Osborn et al 2003</p>
2.	<p>There is evidence from one small case study ([+]<sup>4</sup>) that screening long-term psychiatric hospital patients can identify previously undetected coronary heart disease. Screening 64 patients identified one new case of established CHD and 22 previously undetected test abnormalities. Participation in the intervention was high (64/94 i.e.66%) but only a small proportion consented to having blood tests.</p> <p>4 Haw et al 2004</p>
3.	<p>There is evidence from one RCT ([+]<sup>5</sup>) that in an area of deprivation, postal prompts to patients and their GPs following an acute coronary event, improves monitoring of patients risk and the likelihood of the patient having at least one consultation with their GP or nurse.</p> <p>5 Feder et al 1999</p>
4.	<p>There is evidence from one case study ([+]<sup>6</sup>) to suggest that in an area of deprivation, a project funding a nurse and exercise worker to develop practice nurse and GP skills in identifying and monitoring patients and facilitate the provision of exercise facilities for CHD patients, may lead to a small improvement in cholesterol testing of patients. 72.5% of control patients reported receiving cholesterol tests in the past year compared to 77.8% of the intervention group, p=0.002. No differences were seen in blood pressure measurement.</p> <p>6 Lacey et al 2004</p>
5.	<p>There is weak quality evidence from two case studies ([-]<sup>7,8</sup>) to suggest that offering cardiovascular risk assessment opportunistically to Afro-Caribbean general practice patients or patients from a range of socioeconomic categories may identify a number of people at risk of CHD. However the interventions require further research from well conducted studies before firm conclusions can be made.</p>



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7 Molokhia 2000  
8 Davis et al 1996

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6. Due to the very poor quality nature of a case study ([-]<sup>9</sup>) no firm conclusions can be made on the feasibility of a primary care physician performing hand carried cardiac ultrasound examinations in attenders of an urban clinic for underserved minority patients.

9 Kirkpatrick 2004

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7. There is evidence from three studies to suggest that workplace cardiovascular screening provided in schools or businesses in multi-ethnic low income areas (CBA [-]<sup>10</sup>, case study [-]<sup>11</sup>), or in factory workers (case study [+]<sup>12</sup>) is moderately well attended. Results suggest that a number of participants were identified for referral to a physician for follow-up (outcome reported in two studies CBA [-]<sup>10</sup>, case study [-]<sup>11</sup>). No firm conclusions can be made on patients completion of follow-up as this was only reported in one poor quality study (case study [-]<sup>11</sup>).

10 O'Loughlin et al 1996  
11 Margolis et al 2003  
12 Chatterjee 1997

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8. No firm conclusions can be made on whether continuous interaction with prevention-focused, advanced nurses improves the response level of a minority worksite employee group to CVD screening programs due to the poor quality and lack of methodological information reported in one case study ([-]<sup>13</sup>).

13 Williams et al 2001

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9. Evidence from one UK case study ([-]<sup>14</sup>) evaluating the establishment of a health screening clinic in a prison, indicated a moderate 35% voluntary uptake by the inmates. There were active interventions following the screening for 87 (34%) inmates and 13 (32%) staff screened. These ranged from simple anti-smoking and dietary advice to more formal medical interventions to manage raised blood pressure and cholesterol. Uptake data should be viewed cautiously, as the number of potential participants was not reported.

14 Biswas et al 1997

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- 10.** Two case studies suggest that offering blood pressure measurements at community sites in areas of deprivation can identify a number of people with elevated blood pressure. No firm conclusion can be made on participation rates as these were not reported in the studies. One UK case study ([+]<sup>15</sup>) found 221 people out of 758 first time users of self-reading sphygmomanometers placed in public sites had elevated blood pressure measurements. No firm conclusions can be made regarding physician follow-up as the researchers were unable to contact all of these people. One US RCT ([+]<sup>16</sup>) providing blood pressure measurements at a range of community sites and identified 31.4% with elevated blood pressure and 10.7% with severely elevated blood pressure. Transferability and cost-effectiveness of such interventions requires further study.

15 Hamilton et al 1997

16 Krieger et al 1999

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- 11.** There is evidence from two case studies evaluating phase one ([+]<sup>17</sup>) and phase two ([-]<sup>18</sup>) of the Well-Integrated Screening and Evaluation for Women Across the Nation (WISEWOMAN) to suggest that adding cardiovascular screening to state breast and cervical cancer screening programmes reaches financially disadvantaged and minority women and identifies a number at risk of coronary heart disease. No conclusions can be made on participation rates or physician referrals as these outcomes have not been reported. Applicability and transferability of these programmes to a UK setting requires further study.

17 Byers et al 1999

18 Will et al 2004

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- 12.** Evidence from three studies (two case studies [+]<sup>19,20</sup> and one uncontrolled before and after study [+]<sup>21</sup>) suggests that culturally-sensitive education sessions that include an element of cardiovascular risk assessment may be effective in the identification of at risk individuals. Two moderate quality studies evaluated educational interventions in black and minority community groups ([+]<sup>19</sup>) and Turkish immigrants at a Mosque ([+]<sup>20</sup>), offering blood pressure measurements. Participation with blood pressure measurements were high, and revealed a number of patients with uncontrolled hypertension or with elevated blood pressure readings.

Evidence from one case study ([-]<sup>21</sup>) in which health checks were conducted before and after a church-based educational intervention with predominantly black participants should be viewed more cautiously owing to concerns of transferability and applicability.

19 Huckerby et al 2006

20 Bader et al 2006

21 Oexmann et al 2001

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- 13.** Evidence from one qualitative study ([++]<sup>22</sup>) of service users with severe mental illness, and primary care staff and community mental health teams, indicate a range of perceived obstacles to CHD screening. These include lack of appropriate resources in existing services; anticipation of low uptake rates by patients with SMI; perceived difficulty in making lifestyle changes amongst people with SMI; patients dislike having blood tests and lack of funding for CHD screening services or it not being seen as a priority by Trust management. There was some disagreement about the best way to
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deliver appropriate care, and authors concluded that increased risk of CHD associated with SMI and antipsychotic medications requires flexible solutions with clear lines of responsibility for assessing, communication and managing CHD risks.

22 Wright et al 2006

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### **3.3 Key Question 2**

#### **Once identified and reached, how do PCTs support patients at increased risk of developing or with established CHD?**

Just one study in disadvantaged groups was identified that evaluated an intervention to improve patient compliance to statins/lipid lowering therapies or to retention within services. No primary UK studies were identified in generic populations. Therefore research conducted in OECD countries for all population types were considered.

With these broader inclusion criteria, a total of seven studies were identified that addressed interventions to improve patient compliance with statins or lipid-lowering medication (SR [+] Beswick et al 2004, 2 RCTs [-] Faulkner et al 2000, Guthrie 2001, Lopez-Cabezas et al 2006, UBCA [-] Ali 2003, 2 Observational [-] Bluml et al 2000, Muhlestein et al 2001).

There was also a lack of research regarding retaining patients within services. Just one systematic review was identified regarding adherence to cardiac rehabilitation, which found some promising results for self-management techniques based around individualised assessment, problem solving, goal setting and follow-up. However the authors concluded that there were few studies of sufficient quality to make specific recommendations of methods to improve adherence to outpatient cardiac rehabilitation and its components.

#### **3.3.1 Interventions to improve compliance with statins or lipid lowering therapies**

##### **Pharmacist interventions**

Evidence from one US poor quality RCT ([-] Faulkner 2000) suggests that personalised pharmacist telephone follow-up with high-risk hypercholesterolemia patients who were prescribed combination statin drug therapy (lovastatin and colestipol) improved long-term compliance compared to patients who did not receive telephone contact. Pharmacists telephoned patients at their home every week for 12 weeks, placing emphasis on the importance of therapy in reducing the risk of recurrent cardiac events. Patients were questioned about when and where prescriptions were filled, how they paid for their prescriptions, potential side effects, overall well-being, and specific reasons for noncompliance when applicable.

Long-term compliance based on prescription refill records indicated that at 1 and 2 years, patients receiving telephone contact demonstrated significantly better compliance than those not receiving this contact. Compliance with lovastatin at 2 years: intervention = 63%, control 39% ( $p < 0.05$ ). The number of compliant patients ( $\geq 80\%$  of prescriptions filled) was also significantly greater in the telephone contact group. At two years there

were 9 lovastatin-compliant intervention patients vs 4 controls ( $p < 0.05$ ) and 7 colestipol-compliant intervention patients compared to 1 control patient ( $p < 0.05$ ). Results should be viewed cautiously because of the small sample size ( $n = 30$ ), and concerns about applicability to disadvantaged groups.

Evidence from one low quality RCT ([-] Lopez-Cabezas 2006) evaluated a pharmacist intervention with heart failure patients consisting of education on the day of discharge about drug therapy, disease and diet, plus post-discharge telephone strengthening. Patients were provided with a pharmacist phone number to contact if they had any doubts during their treatment and pharmacists also made a telephone call to the patient during the first 6 months of treatment every two months, to strengthen the intervention and solve any problems that could have arisen.

Up to 6 months. patients in the intervention group had a greater degree of compliance than those in the control group, but the difference became non-significant at 12 months. Specifically, compliance (i.e. percentage of reliable patients taking 95-100% of their prescribed doses) was 88.2% versus 60.5% at 2 months ( $p = 0.002$ ), 91.1% vs 69.0% at 6 months ( $p = 0.015$ ) and 85.0% vs 73.9% at 12 months follow-up (not significant). These results should be viewed with caution however, as there was poor follow-up of the compliance measure and an intention to treat analysis has not been reported. It is possible that this introduced bias as patients not providing compliance data may have been non-compliant. Furthermore, the authors do not report what drugs were prescribed.

Evidence from one poor quality uncontrolled before and after study ([-] Ali 2003) suggests that a community pharmacist program for patients with hypercholesterolemia who were non-compliant with their prescribed lipid lowering agents, increases the number of compliant patients after six months. Participants were recruited from a patient education forum held by individual pharmacies. Participants who enrolled in the study had an individual consultation with a community pharmacist. Over the duration of the study, pharmacists telephoned subjects at two month intervals as a means of program reinforcement.

The authors state that the number of self-reported compliant patients increased significantly by 15.3% from 37 patients to 51 patients, respectively ( $p < 0.05$ ). This figure appears to be based on the difference between the percentage of compliant patients before the intervention (40.7%) and after the intervention (56%). However the data is unreliable as the total study population is never made clear. It appears from table 1 of the study that 149 patients were enrolled, yet figure 2 (pre- and post- intervention compliance rates) equates 51 patients to 56% of total and 37 patients to 40.7%, indicating participant numbers to be 91. An explanation for these discrepancies is not provided. The results of the study should therefore be treated with caution.

Owing to the poor quality of an observational study ([-] Bluml et al 2000) no firm conclusions can be made on the effectiveness of Project ImPACT – a demonstration project in which pharmacists worked collaboratively with dyslipidemia patients and physicians to help them achieve their National Cholesterol Education Program (NCEP) goals. Patients attended an initial consultation and follow-up visits with a community-based pharmacist. In a population of 397 patients over an average period of 24.6 months, observed rates for persistence and compliance with medication therapy were 93.6% and 90.1% respectively. 62.5% of patients had reached and were maintained at

their NCEP lipid goal at the end of the project. Results should be treated with caution as limited methodological information is provided, only project completers were included in the analysis (which may have excluded non-compliant patients from the results) and the lack of comparison group means that it is not possible to tell whether the outcomes were a direct result of the intervention.

### **Telephone reminders**

One low quality RCT ([-]Guthrie 2001) found that telephone reminders and postcards to reinforce messages about coronary risk reduction did not produce significant improvements in short term compliance in patients prescribed pravastatin treatment. Results should be considered cautiously as only those who completed the study are analysed, compliance is measured by patient self-reports, the study was run and funded by a pharmaceutical company with the intervention being delivered by a national program coordinating centre and physicians received honoraria for enrolling patients.

### **Patient education**

Evidence from one moderate quality uncontrolled before and after study ([+]Gonzalez et al 2005) suggests that nurse-led patient education resulted in no significant difference in self-reported medication compliance at one year for heart failure patients attending an outpatient clinic. 92.3% of patients were fully compliant at the first nurse visit and 88.3% at 1 year ( $p=0.22$ ). Applicability may be limited as it is not reported whether lipid lowering therapy was prescribed and the intervention was not aimed at disadvantaged groups.

As previously described (see 'pharmacist interventions' above), one low quality RCT examined a pharmacy initiative involving patient education and telephone follow-up ([-] Lopez-Cabezas 2006). Up to 6 months, patients in the intervention group had a greater degree of compliance degree than those in the control group, but the difference became non-significant at 12 months. It is not possible to judge which aspect of the pharmacist care was responsible.

### **In-hospital prescription of statin agents**

The poor methodological quality makes it impossible to draw firm conclusions from one observational study ([-]Muhlestein et al 2001) suggesting that in-hospital prescription of statins for patients undergoing arteriography improves medication compliance compared to post discharge prescription. Of the 343 patients meeting NCEP guidelines for statin therapy followed up, 65 had been discharged with a statin prescription and 278 had not. A total of 162 (47%) of those surveyed were regularly taking a prescription at follow-up. Long-term statin compliance was significantly higher among patients initially discharged with a statin prescription than those who were not (77% versus. 40%,  $p<0.001$ ). Results should be viewed cautiously because of the high attrition (343 of 600 study participants were followed up), and patient self-reported compliance measure at only one time point. The study is also poorly reported, no exact follow up time is given (varied from 2 - 4.6 years) and it is never clearly stated that those patients who were not discharged with a statin prescription were prescribed statins at a later date.

### **3.3.2 Retention of patients within services**

Just one moderate quality health technology assessment (SR [+] Beswick et al 2004) was identified that considered the effectiveness of interventions to improve uptake, adherence or professional compliance with cardiac rehabilitation (CR). The number of studies and results of the review were reported separately for each outcome. Results are reported here for the review of interventions to improve adherence with cardiac rehabilitation programmes. Adherence was defined as patient attendance at all or the majority of an outpatient programme or the maintenance of lifestyle changes associated with cardiac rehabilitation.

The systematic review identified 7 RCTs and 7 non-randomised studies of adherence to CR programmes. Applicability and transferability of the results is limited as only 6 studies were published after 1995 and only one UK study (1998) identified. None of the studies were reported as having been conducted in disadvantaged groups.

Evidence from the systematic review ([+] Beswick et al 2004) highlights the dearth of literature reporting the evaluation of simple interventions aimed at improving adherence to cardiac rehabilitation for all patients or specific groups of patients. The systematic review identified few studies of sufficient quality to support specific recommendations of methods to improve adherence.

The most promising approach was the use of self-management techniques based around individualised assessment, problem solving, goal setting and follow-up (examined in three RCTs and two non-randomised studies). This is most likely to be effective in improving specific aspects of rehabilitation, including diet and exercise and a further review in a broader context of health and disease may be appropriate.

### **3.3.3 Summary of results for different disadvantaged populations**

Just one moderate quality RCT ([+] Lopez-Cabezas 2006) involved people predominantly from disadvantaged groups. The study population had a low educational level with only 7% of the sample having reached secondary / university education. Significantly more patients receiving multi-factorial education by pharmacists were compliant for the first 6 months than those who received standard care (88.2% compliance vs 60.5% at 2 months,  $p=0.002$  and 91.1% versus 69.0% at 6 months ( $p=0.015$ ). However, no significant difference was seen at 12 months.

### 3.3.3 Draft Statements

No.	Statement
<b>Supporting patients once identified and reached</b>	
1.	<p>There is a paucity of good quality research on the effectiveness of pharmacist interventions to improve compliance with lipid lowering therapy, particularly in disadvantaged groups. Results from the four studies identified (two RCTs [-]<sup>1,2</sup> one UBCA [-]<sup>3</sup> and one observational study [-]<sup>4</sup>) should be viewed with caution owing to poor methodological quality and doubts about applicability to disadvantaged groups.</p> <p>1 Faulkner et al 2000 2 Lopez-Cabezas et al 2006 3 Ali 2003 4 Bluml et al 2000</p>
2.	<p>Evidence from one low quality RCT ([-]<sup>5</sup>) suggests that telephone reminders and postcards to reinforce messages about coronary risk reduction does not produce significant improvements in short term compliance in patients prescribed pravastatin treatment. Results should be viewed with caution as the poor quality study is likely to be highly biased and may not be applicable to disadvantaged groups.</p> <p>5 Guthrie 2001</p>
3.	<p>Well conducted research examining patient education to improve compliance with lipid lowering therapy is required before firm conclusions can be made regarding its effectiveness, particularly in disadvantaged groups. Evidence from one uncontrolled before and after study ([+]<sup>6</sup>) of nurse-led education in heart failure patients suggested there was no significant difference in self-reported compliance at one year, whereas one RCT ([-]<sup>2</sup>) of a pharmacy intervention including patient education for heart failure patients found a significant difference in compliance at 2 and 6 months, but not at 12 months. Applicability of the studies may be limited as the medication prescribed was not specified.</p> <p>2 Lopez-Cabezas et al 2006 6 Gonzalez et al 2005</p>
4.	<p>Due to poor methodological quality, no firm conclusions can be made from one observational study ([-]<sup>7</sup>) suggesting in hospital prescription of statins for patients undergoing arteriography improves medication compliance compared to post discharge prescription. Effectiveness and applicability to disadvantaged populations is required in well-conducted research.</p> <p>7 Muhlestein et al 2001</p>
5.	<p>Well-conducted research is required examining the effectiveness of improving retention of patients at risk of or with CHD within services. Evidence from the one systematic review identified ([+]<sup>8</sup>) highlights the dearth of literature reporting the evaluation of simple interventions aimed at improving adherence to cardiac rehabilitation for all patients or</p>



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No.	Statement
8	<p data-bbox="321 247 1469 441">specific groups of patients. The systematic review identified few studies of sufficient quality to enable the recommendation of specific methods to improve adherence to outpatient cardiac rehabilitation. The most promising approach was the use of self-management techniques based around individualised assessment, problem solving, goal setting and follow-up. This was most likely to be effective in improving specific aspects of rehabilitation, including diet and exercise.</p> <p data-bbox="321 478 592 504">Beswick et al 2004</p>

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### **3.4 Key Question 3**

#### ***How can PCTs provide or improve access to services aimed at people at increased risk or with established CHD?***

Sixteen studies regarding access to services aimed at people at increased risk or with established CHD were identified for disadvantaged populations. UK research in generic populations was also considered, resulting in one further study investigating the role of age on access to cardiac rehabilitation.

Evidence regarding the effectiveness of interventions to improve access to services for people at risk or with established CHD was reported in five studies (SR [+] Beswick et al 2004, 2 RCTs [+] Feder et al 1999, Krieger et al 1999, 2 CS [+] Manson-Siddle et al 1999, Lacey 2004)

Evidence from eleven qualitative studies identified a number of enablers and barriers for ethnic groups and people living in socially deprived areas (2 [++] Netto et al 2007, Tod et al 2001, 7 [+] Clark et al 2002, Higginbottom 2006, Lindesey 1997, Macintosh 2003, Tod et al 2002, Richards et al 2003, Vishram et al 2007, 2 [-]East et al 2004, Naqvi 2003).

#### **3.4.1 Interventions to improve access to services for patients at increased risk/ with established CHD**

One moderate quality health technology assessment (SR [+] Beswick et al 2004) was identified that considered the effectiveness of interventions to improve uptake, adherence or professional compliance with cardiac rehabilitation. The number of studies and results of the review were reported separately for each outcome. The results here are reported for uptake of cardiac rehabilitation (CR). Just three studies were conducted in the UK and published after 1995.

Overall, few trials aimed at improving uptake of cardiac rehabilitation were identified, and the review highlighted the need for trials of interventions applicable to all patients and trials targeting specific under-represented groups. The review identified three RCTs and 5 non-randomised studies of interventions to improve successful recruitment of patients attending any outpatient cardiac rehabilitation.

The review reported that evidence from the three included studies suggested that approaches aimed at motivating patients may be of value in improving CR uptake. Improvements in uptake of outpatient CR and heart groups were shown in two randomised trials and one before and after study. Methods of communication used were letters, pamphlets or conversation with a professional.

The authors also reported that regular support and practice assistance from trained lay volunteers was effective in improving uptake of outpatient cardiac rehabilitation in a non-randomised trial in the UK (71% of intervention patients attended a first appointment at outpatient CR compared with 47% in the control district, p=0.02). A multifaceted approach to the coordination of transfer of care from hospital to general practice

including patient self-management was effective in improving CR uptake in a UK-based RCT. The intervention consisted of liaison nurse encouragement for patients to see a practice nurse after discharge, liaison support for practice nurses, and prompts and guidance for patients by means of a personal record card. Attendance at one or more sessions was significantly increased in the intervention group (42% attendance of at least one outpatient CR session in the intervention group compared with 24% of controls) and 57% in the control group,  $p < 0.0025$ ).

The review also considered research aimed at improving patient uptake by intervening at the level of healthcare professionals. A further three studies were identified. The value of physician endorsement in encouraging patient participation in CR or interventions to improve the referral process was not confirmed.

In addition to the systematic review, four primary studies were identified regarding interventions to improve or encourage access to services for patients at increased risk or with CHD ([2 RCTs [+] Krieger et al 1999, [+] Feder et al 1999, 2 case studies [+] Manson-Siddle et al 1999, [-] Lacey 2004) .

One US moderate quality RCT ([+] Krieger et al 1999) showed improved uptake of services with a tracking and outreach intervention delivered by community health workers to a predominantly black population in an area of deprivation. Following blood pressure measurements at various community sites (results reported in Q1) at-risk patients were randomised to either usual referral or enhanced referral facilitated by a community health worker (CHW). The intervention included referral to medical care and assistance in locating a provider if required; an appointment made by the CHW plus reminder letters and follow-up to determine if appointment was kept; a new appointment for each missed one, and assistance in reducing barriers to care through referral to community transportation, child care, or other services. 55.5% of eligible patients enrolled. The intervention increased the rate of follow-up with medical care by 39.4% (95%CI 14 to 71%,  $p = 0.01$ ) relative to usual care. 65% of the intervention group completed a medical appointment within 90 days of referral, compared to 46.7% of the usual care group ( $p = 0.001$ ). The number needed to treat to bring 1 person to care was 5 (95%CI 3 to 13).

Evidence from one UK case study using retrospective data analysis ([+] Manson-Siddle 1999) suggested that providing extra resources for tertiary cardiology services improved socioeconomic equity. Scunthorpe and Grimsby were provided with the additional appointment of a general physician with interest in cardiology services and increased funding. The ratio of angiography in the *Affluent Achievers* to that in the *Have-Nots* decreased by 48% to 0.62:1 and the ratio of revascularisation rates in the *Affluent Achievers* to that in the *Have-nots* also decreased by 54% to 0.71:1. However, the considerable variation in rates across the Lifestyle groups resulted in little improvement in the linear trend for revascularisations. The authors conclude that additional resources for tertiary cardiology may have reduced socioeconomic inequities in angiography without being specifically targeted at the needier, more deprived groups, but the impact on revascularisation equity is not yet clear. The lack of a comparison group however limits the conclusions.

Evidence from one UK case study ([-]Lacey 2004) found that a project involving one nurse and one exercise worker supporting GP practices in a socially deprived area improved the provision of cardiac rehabilitation services such as exercise programmes,

psychological and social support and dietary advice. Project nurses worked directly with practice nurses and GPs to develop their skills in identifying and monitoring patients with CHD, giving lifestyle advice and ensuring optimum medication regimes. The exercise worker worked with practices and the community to identify and facilitate the provision of exercise resources suitable for CHD patients. 7 of 11 intervention practices offered CR services after the intervention whereas none had done so before. None of the control practices offered CR before or after the project. No data were recorded however on the uptake of these services.

One moderate (+) quality RCT (Feder et al 1999) found postal prompts to patients following an acute coronary event and to their general practitioners (GPs), improved monitoring of patients' risk (previously reported in section 3.2.1). Patients received prompts with secondary prevention advice and suggestions to make an appointment for review with their GP or practice nurse. GPs were sent reminders about effectiveness interventions and local CHD guidelines. Intervention patients were more likely to have at least one consultation with their GP or nurse (OR 2.1 95%CI 1.1 to 3.9,  $p < 0.05$ ).

### **3.4.2 Enablers and barriers to improving access to services**

Several common themes emerged from UK qualitative studies regarding enablers and barriers for patients at risk or with established CHD in accessing care in disadvantaged groups. In summary the factors reported were

- Flexible services
- Transport
- Personal views
- Awareness / understanding of services and treatment
- Religious and cultural issues
- One-to-one care / group care
- Patient communication problems
- Absence of CR services

These factors are discussed below in according to specific disadvantaged groups and for the one study regarding age and access to services.

#### **People living in socially deprived areas**

Evidence from three qualitative studies ([++] Tod et al 2001, [+] Tod et al 2002, [-] East et al 2004) involving people from socially deprived areas highlighted the importance of flexible services for accessing care. Lack of flexibility was a commonly cited barrier. Inconvenient timing of appointments or classes that may clash with other commitments was reported in a study of myocardial patients attending a community cardiac rehabilitation service ([-] East et al 2004) and a study of patients with angina and primary care staff ([++] Tod et al 2001). Timing of appointments that may disrupt routines in elderly people was reported in a study of post myocardial patients, health visitors and heart support groups ([+] Tod et al 2002). The flexibility utilised in a community cardiac rehabilitation service was viewed positively in one qualitative evaluation of the project ([-] East et al 2004).

Lack of transport was a reported barrier in studies for post MI patients ([+]Tod et al 2002, [-] East et al 2004). The presence of home-visits in one cardiac rehabilitation programme was appreciated by patients as a way of overcoming transport issues ([-] East et al 2004).

Two qualitative studies in people from socially deprived areas reported personal factors as barriers to accessing services. Minimising severity of their illness and taking a cope and don't fuss approach was a reported barrier in one study ([++] Tod et al 2001). One study found that self-blame was a barrier and that fear of blame was more common in respondents from a deprived area. ([+] Richards et al 2003)

Patients' lack of understanding or awareness of services and treatment was suggested as a barrier in two qualitative studies ([+] Tod et al 2002, [++] Tod et al 2001)

One study ([-] East et al 2004) highlighted that a number of service users were reluctant to mix with other people in a group; that reluctance was a common reason for electing not to attend the hospital-based cardiac rehabilitation. For these patients care on a one-to-one basis was a positive aspect of the inner-city community heart nurse-led cardiac rehabilitation service, being evaluated in the study.

The absence of cardiac rehabilitation services and long waiting lists were also noted as barriers in one study ([+] Tod et al 2001). Finding alternatives, such as seeking advice from elsewhere or paying for private rehabilitation, and flexibility over control of time to access hospital appointments were facilitating options for the better off. Thus, professional and more affluent groups were more likely to negotiate a way round the system.

One moderate quality qualitative study examined GPs and practice-based opinions of the barriers to providing cardiac services, following an intervention that provided additional resources to promote secondary prevention of CHD for patients in an area of significant deprivation ([+] Macintosh 2003). The study was the qualitative component of the evaluation by Lacey 2004 (reported in section 3.2.1).

There was agreement amongst respondents regarding the need to expand cardiac rehabilitation services and that the expansion would need to take place in the community. It was also clear that this was thought to be problematic without a significant increase in resources. The resource most commonly cited as being key to expansion was practice nurse hours. Nurses were ready to take the lead in many areas of CHD service development and this was largely supported by GPs. Enthusiasm for nurse-led clinics was tempered by a concern that appropriate skills and knowledge were needed, by a desire to have clear protocols, by a stated need, by practice nurses (PNs), to feel that they were supported by the GPs and concern that the perceived shortage of PN hours could create problems of conflicting priorities.

### **Ethnic groups**

Five qualitative studies considered access issues in Asian ([++] Netto et al 2007, [+] Vishram et al 2007, [+] Lindesey 1997, [-] Naqvi 2003) and African-Caribbean populations ([+] Higginbottom 2006).

Religious and cultural issues were a common theme amongst the studies.

Healthcare providers perceived female inhibitions and religious practices to be barriers to service access in South Asian patients ([-] Naqvi 2003). Cultural barriers amongst South Asian women were identified in one study, specifically family commitments and influence, language, 'inappropriate' topics and traditional clothing ([+] Vishram et al 2007).

The need for flexibility in the timing of services was highlighted in two studies. One study highlighted barriers due to the timing of cardiac rehabilitation sessions conflicting with the call to prayer ([+] Vishram et al 2007). The sensitivity in planning activities around religious events utilised in a CHD prevention service was viewed positively in one study ([++] Netto et al 2007), however whether this directly enabled patients to access the services is not clear.

Patients' lack of understanding of services and treatment was suggested as a barrier to access for Asian populations, including low levels of education and misunderstanding of Western medicine ([-] Naqvi 2003) and lack of knowledge on what was available and how to apply ([+] Lindsey 1997).

Communication language barriers were also seen as obstacles to accessing services in two studies concerning Asian patients ([-] Naqvi 2003, [+] Vishram et al 2007). One qualitative study ([+] Higginbottom 2006) exploring access barriers in Afro-Caribbean hypertensive patients, identified the notion of avoiding 'running to the doctor' and dissatisfaction with their GP care.

### **General populations**

One qualitative study explored health professional's views on the role of age on access to cardiac rehabilitation services in Scotland ([+] Clark et al 2002). While only one cardiac rehabilitation programme used an overt age criterion, age was widely perceived to influence access, both during initial assessment and in assessments for exercise components; and while respondents acknowledged that other criteria influenced selection, those cited most often were all more common during old age, e.g. other medical ailments, lower initial exercise tolerance, poor access to transport. Focus groups revealed that staff appeared to have knowledge of the benefits for older people but that scarcity of resources prevented them offering more accessible and appropriate services.

### 3.4.3 Draft Statement

No.	Statement
<b>Providing and improving access</b>	
1.	<p>Evidence from one systematic review ([+]<sup>1</sup>) highlighted the need for trials of interventions applicable to all patients and targeting specific under-represented groups. The review revealed some evidence to support the use of approaches aimed at motivating patients, regular support and practice assistance from trained lay volunteers and a multifaceted approach for the coordination of transfer of care from hospital to general practice. Applicability and transferability of these programmes to disadvantaged populations requires further study.</p> <p>1 Beswick et al 2004</p>
2.	<p>Evidence from three studies indicated the importance of providing additional staff resources to encourage or support the uptake of services in people living in socially deprived areas.</p> <p>One US moderate quality RCT ([+]<sup>2</sup>) in a predominantly black population from a low income area found improved uptake of services with a tracking and outreach intervention, where community health workers supported patients in completing referral to their physician for high blood pressure. Evidence from one non-comparative UK case study ([+]<sup>3</sup>) indicates that additional resources for tertiary cardiology may have reduced socioeconomic inequities in angiography without being specifically targeted at the needier, more deprived groups, but the impact on revascularisation equity is not yet clear.</p> <p>Evidence from one UK case study ([-]<sup>4</sup>) suggested that a project funding one nurse and one exercise worker to support GP practices in a socially deprived area increased the practices provision of cardiac rehabilitation services such as exercise programmes, psychological and social support and dietary advice. Project nurses worked directly with practice nurses and GPs to develop their skills in identifying and monitoring patients with CHD, giving lifestyle advice and ensuring optimum medication regimes and an exercise worker worked with practices and the community to identify and facilitate the provision of exercise resources suitable for CHD patients.</p> <p>2 Krieger et al 1999 3 Manson-Siddle 4 Lacey 2004</p>
3.	<p>There is evidence from one RCT ([+]<sup>5</sup>) that in an area of deprivation, postal prompts to patients and their GPs following an acute coronary event, improved the likelihood of the patient having at least one consultation with their GP or nurse.</p> <p>5 Feder et al 1999</p>
4.	<p>A number of barriers and enablers to accessing services were identified in five</p>

No.	Statement
	<p data-bbox="224 243 1227 277">qualitative studies involving people from socially deprived areas ([++]<sup>6</sup> [ +]<sup>7-10</sup>).</p> <p data-bbox="224 298 1341 529">Common themes were a lack of understanding of services and treatments and the need for flexible services; the inconvenient timing of appointments and the lack of transport were both cited as barriers; with the latter overcome by the provision of home visits. Personal factors such as minimising the severity of their illness, taking a cope and don't fuss approach and fear of blame were also reported as barriers. The absence of cardiac rehabilitation services and long waiting lists was also noted and for some patients the reluctance to attend group care. ([++]<sup>6</sup> [ +]<sup>7,8</sup>, [-]<sup>9</sup>).</p> <p data-bbox="224 550 1341 646">Healthcare providers agreed on the need to expand cardiac rehabilitation services to reach out into the communities and that the expansion would need to take place in the community t ([+]<sup>10</sup>)</p> <p data-bbox="224 667 431 701">6 Tod et al 2001</p> <p data-bbox="224 722 431 751">7 Tod et al 2002</p> <p data-bbox="224 772 500 802">8 Richards et al 2003</p> <p data-bbox="224 823 444 852">9 East et al 2004</p> <p data-bbox="224 873 470 903">10 Macintosh 2003</p>
5.	<p data-bbox="224 915 1276 1012">A number of barriers and enablers to accessing services were identified in five qualitative studies involving Asian populations ([++]<sup>11</sup>, [ +]<sup>12-14</sup>) and Afro-Caribbean populations ([+]<sup>15</sup>)</p> <p data-bbox="224 1033 1341 1264">Amongst Asian populations, a range of religious and cultural issues were identified including female inhibitions, religious practices, family commitments and influence, and 'inappropriate' topics. The need for flexibility in the timing of services was highlighted and sensitivity in planning activities around religious events was viewed positively. Patients lack of understanding of services and treatment, including low levels of education and misunderstanding of Western medicine, what services were available and how to apply. Communication and language barriers were also perceived.</p> <p data-bbox="224 1297 1341 1369">A cope and don't fuss approach amongst Afro-Caribbean hypertensive patients was a reported barrier to accessing services ([+]<sup>15</sup>).</p> <p data-bbox="224 1402 470 1432">11 Netto et al 2007</p> <p data-bbox="224 1453 509 1482">12 Vishram et al 2007</p> <p data-bbox="224 1503 412 1533">13 Naqvi 2003</p> <p data-bbox="224 1554 454 1583">14 Lindesey 1997</p> <p data-bbox="224 1604 509 1633">15 Higginbottom 2006</p>



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No.	Statement
6.	One qualitative study of cardiac rehabilitation coordinators in Scotland ([+] <sup>16</sup> ), found that age was widely perceived to influence access, both during initial assessment and in assessments for exercise components. Focus groups revealed that staff appeared to have knowledge of the benefits for older people but that scarcity of resources prevented them offering more accessible and appropriate services.  16 Clark 2002 et al

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## 4. Conclusion

There is a paucity of good quality research on interventions for the identification, improving service access and support for people at risk or with CHD in disadvantaged groups.

No firm recommendations can be made from the literature identified for interventions to improve identification of people with or at risk of CHD, however a number of promising initiatives were found. These included inviting specific populations to attend screening at their general practice, community blood-pressure measurements, workplace screening, adding cardiovascular screening to breast and cervical cancer programmes and culturally sensitive education sessions that include cardiovascular risk assessment. Further well-designed research is required to determine the cost-effectiveness and transferability of such initiatives.

The quality of research was particularly poor for improving compliance with statin / lipid lowering therapy. Whilst several randomised controlled trials were identified, their results should be viewed with caution because of their inadequate methodologies and poor study reporting. There is also dearth of literature regarding service retention of patients at risk or with established CHD. A broader review of the evidence looking at retention across all disease populations may identify further relevant research.

Barriers and enablers to accessing services for some disadvantaged populations are well-documented. Interventional studies are required to evaluate the level of impact on service take-up resulting from removal of obstacles. Four primary studies were identified that indicated the importance of providing additional resources (primarily staff) to encourage or support the uptake of services in people living in socially deprived areas, but further work is needed to determine cost-effectiveness.

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