

Evidence Tables

Key

CCT = Controlled Clinical Trial
CHD = Coronary Heart Disease
CI = Confidence Interval
CVD = Cardiovascular Disease
GP = General Practitioners
MI = Myocardial Infarction
PN = Practice Nurse
RCT = Randomised Controlled Trial
IHD = Ischaemic Heart Disease
PVD = Peripheral Vascular Disease
BMI = Body Mass Index
OR = Odds Ratio

Q1 Interventions to identify people at risk or with established CHD

Q1. Practice-based initiatives

First author and date	Study Design & Quality (++)/+/(-)	Intervention	Study Population	Research Question	Main results	Applicability	Confounders/ Comments
Evidence of Efficacy (Internal Validity)							
Akhtar 2001	Case study (-)	<p>Twenty-minute appointments with the district nurse and the health promotion facilitator from the ethnic minority team. The following information was obtained:</p> <ul style="list-style-type: none"> Blood pressure measurement Urinalysis Weight and BMI Smoking status Level of physical activity Dietary intake Financial circumstances <p>To complement the screening sessions, patients were also invited to attend an informal 90-minute health promotion and education session every week at a local health centre.</p>	<p>369 South Asian males aged 40 or more, were identified from the practice records of a Bradford surgery. The men were invited to attend the GP surgery on a specified date for an appointment with the district nurse and health promotion facilitator.</p> <p>Results are based on the 159 who attended screening.</p> <p>No further participant demographic details reported.</p>	<p>Research aims are not reported.</p> <p>Objective of the screening sessions was to review treatment, offer lifestyle interventions and to refer patients to other members of the multidisciplinary team where appropriate.</p>	<p>After 26 weeks the authors report seeing 196 of the 369 patients. 159 (81%) attended the screening sessions and 37 (19%) did not.</p> <p>52 (32%) were identified as having undiagnosed hypertension.</p> <p>42 (26%) patients had a risk factor of 30% over next 10 years.</p> <p>101 (63%) patients had a risk factor less than 15% and a follow-up appointment was made in one year's time.</p> <p>14 (8%) had undiagnosed diabetes and 16 (10%) with uncontrolled diabetes.</p> <p>10 (6%) had raised BMI and were referred to dietician, 16 (10%) had raised BMI and were referred to exercise programme, 28 (17%) had raised BMI and were referred to a smoking cessation clinic.</p>	Likely to be applicable to similar UK South Asian Male populations.	<p>This paper is more a discussion of an intervention introduced in a GP practice than a full evaluation of a clinical trial. Study objectives are not reported, limited information is provided on sampling, reasons for non-attendance, study dates and outcomes for those referred.</p> <p>The results of the screening sessions are poorly described. The authors state they had 'seen' 196 patients, but it is unclear what this means. Table 1 indicates that 159 attended the screening sessions and 37 did not. Percentages have been calculated on the 159 attendees, not the 196 'seen' or the 369 invited to attend. It appears therefore that the actual participation rate was 159/369 43.1%.</p> <p>A definition of 'raised BMI'</p>

							<p>has not been provided, nor is there a rationale for why patients with a raised BMI were referred the different programmes.</p> <p>There is no discussion of the results of the screening session and therefore it is difficult to determine the authors' conclusions. .</p>
Davis 1996	<p>Case study using retrospective data analysis of computerised project data recorded between September 1988 and March 1993.</p> <p>(-)</p>	<p>Opportunistic risk factor assessments in 43 general practices, as part of a wider programme -the 'Be Better Hearted' (BBH) CHD health promotion programme.</p> <p>The BBH programme focused on three inter-related key areas: 1) individual risk factor assessment in the primary care setting with advice and follow-up for those identified as being at risk, 2) community initiatives, 3) development of the health board exemplar role.</p> <p>Risk factor assessment in primary care was carried out on an opportunistic basis by members of the primary care team. Serum cholesterol measurement was advised only if personal history, family history or clinical signs suggested the likelihood of hypercholesterolemia.</p>	<p>20,053 people living in the Forth Valley area of Scotland. 50% male. 29.8% of attendees were from wards classed in the two lowest socio-economic categories (SEC) according to Carstairs and Morris: SEC1 = 4964 SEC2 = 4456 SEC3 = 3543 SEC4 = 2748 SEC5 = 2759</p>	<p>What are the characteristics of a population attending a primary care based CHD prevention programme?</p> <p>What are the associations between socioeconomic status and prevalence of risk factors for this population?</p> <p>What are the prevention programme participation rates for this population?</p>	<p>In the target 30-65 year age group, 15% of the of the Forth Valley population participated. When the BBH attendance rate was calculated for each of the five 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).</p> <p>Of 20,053 attenders for baseline screening, 53% were discharged without follow-up, 41% were referred to a nurse or dietician and 6% were referred to a GP (these results were not broken down by SEC).</p> <p>Percentages of BBH attenders with CHD risk factors were as follows: Cigarette smoking 30% Overweight (BMI >25) 56% Excess alcohol intake: 12% Less than moderate exercise: 57% Raised systolic BP (>130 mmHg): 14%</p>	<p>UK-based study likely to be applicable.</p>	<p>Poorly reported study confounded by proportion of missing data.</p> <p>20053 patients attended BBH assessments, but the analysis of attendance by SES only accounts for 18470 patients.</p> <p>Recording of data from follow-up visits was incomplete; of 9404 referrals only 1058 final visit entries were reported.</p>

					<p>Raised diastolic BP (>90 mmHG): 23%.</p> <p>Serum cholesterol values were available for 31.3% of the screened population, selected on the basis of risk. Of these, 71.4% were greater than 5.2mmol/l.</p>		
Feder 1999	RCT Cluster 1 year follow-up (+)	<p>172 patients received the intervention and 156 the control.</p> <p>Intervention: Postal prompts to patients sent 2 weeks and 3 months after discharge from hospital. The prompts contained recommendations for lowering the risk of another coronary event, including lifestyle changes drug treatment, and making an appointment to discuss these issues with the general practitioner or practice nurse. GPs were sent letters for each recruited patient 2 weeks and 3 months after discharge separately from the hospital's discharge summary. These contained a summary of effective secondary prevention, with reference to local guidelines, and a review card derived from guidelines for insertion in the patient's medical record.</p> <p>Control: Standard medical care.</p>	<p>328 Patients discharged from hospital for MI or unstable angina attending 52 general practices in Hackney, described as a deprived multi-ethnic area.</p> <p>Intervention group: mean age 66.4, 107 (62%) male.</p> <p>Control group: mean age 64.8, 87 (56%) male.</p>	Do postal prompts to patients who have survived an acute coronary event and to their general practitioners improve secondary prevention of coronary heart disease?	<p>There were significant differences in the recorded risk factor measurement and advice for: cholesterol OR 4.0 (95% CI 1.9 to 8.2) p<0.001; weight 3.0 (1.5 to 5.8) p<0.01; weight loss or diet advice 2.4 (1.2 to 4.7) p<0.05, exercise advice 5.7 (2.0 to 16.3) p<0.001; smoking habit 1.9 (1.0 to 3.8) p<0.05; smoking advice 2.8 (1.1 to 6.8) p<0.05.</p> <p>There was no significant difference in recorded blood pressure measurement: adjusted OR 1.7 (95%CI 0.9 to 3.8) p>0.05.</p> <p>Patients from the intervention group were significantly more likely to have at least one consultation about coronary heart disease with their general practitioner or nurse OR 2.1 (95% CI 1.1 to 3.9) p<0.05.</p> <p>There were no significant results in the prescribing of cholesterol lowering drugs OR 1.7 (0.8 to 3.4) p>0.05 or beta blockers OR 1.7 (0.8 to 3.0) p>0.05.</p>	Likely to be applicable - UK study in deprived multi-ethnic area.	<p>Whilst follow-up of outcomes collected by practice record is high, results are dependent on the quality of the GPs' records.</p> <p>The method used to collect data on cholesterol lowering drug prescribing at 1 year is incomplete and hence results unreliable. Data was collected only for those aged 70 or less; there was no attempt to follow-up all eligible patients.</p> <p>In their discussion, the authors state they had underestimated the secular trend towards increased prescribing of statins which affected both the intervention and control groups.</p>
Haw 2004	Case study	Screening of long-stay psychiatric patients. The screening	64 psychiatric patients at	Aim was to screen long-stay forensic and	Of the 97 potential participants, 64 (66%) consented to take part in the	UK study in psychiatric	Results are based on small sample sizes and the

	<p>(+)</p>	<p>instruments included a patient interview based on the British Heart Foundation risk prediction chart to gather information about any history of CHD or diabetes mellitus, past and present smoking habits, anthropometric and physiological measurements (BMI, waist circumference, blood pressure, blood tests and electrocardiograms).</p> <p>All participants were offered feedback of their test results. The practice nurse offered appointments to all participants with abnormal blood pressure and blood test results.</p>	<p>psychiatric hospital (adult forensic and rehabilitation sub-unit) in Northampton, UK.</p> <p>56 (91%) were male, 8 (9%) female. 22 (34%) were aged 20-34, 33(52%) aged 35-49 and 9 (14%) aged 50 or more. 47 (73%) were White, 9 (14%) Black, 1 (2%) Asian and 7 (11%) not known.</p>	<p>rehabilitation patients in a specialist psychiatric hospital for CHD risk factors.</p>	<p>study. Of those 36 (37%) also consented to have blood tests.</p> <p>Of the 53 sampled, 9 (17%) electrocardiogram (ECG) abnormalities consistent with CHD or hypertension were present. 7 (13%) ECGs showed minor abnormalities suggestive of CHD, one (2%) showed definite evidence of CHD and one (2%) showed left ventricular hypertrophy.</p> <p>25 patients (44% of the 57 sampled) had a raised screening blood pressure and 3 patients (9% of the 36 sampled) had elevated cholesterol levels.</p> <p>Of the 64 participants, 21 (33%) of participants were overweight (BMI=25.0-29.9) and 25 (39%) were obese (BMI equal/greater than 30).</p> <p>Before the survey eight participants were on the GP CHD register and were being actively treated and monitored for raised blood pressure, diabetes and/or abnormal serum cholesterol. One new case of established CHD was detected by the screening (via ECG) and 22 participants with previously undetected test abnormalities were referred to the hospital's GP service for further investigation.</p> <p>The authors conclude that risk factors for coronary heart disease were more common in this</p>	<p>inpatients likely to be applicable to similar populations though may be limited by small sample size.</p>	<p>response rate is low. This may have introduced volunteer bias or could indicate that the intervention was not well accepted, particularly for data collection by blood test and patient interview.</p> <p>The abstract states 34 people were sampled for blood tests, whereas the full-text states 36.</p> <p>Blood pressure was recorded on a single occasion.</p>
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					population of chronically and severely mentally ill inpatients than in the general population and that these patients need ongoing monitoring and measures aimed at CHD risk reduction.		
Kirkpatrick 2004	Case study (-)	Screening by a physician using a handheld cardiac ultrasound device in an urban health care clinic located in an impoverished area.	153 patients from a clinic located in an impoverished area of Chicago, Illinois. 61 were African American, 88 Hispanic and 4 Caucasian patients. Subject mean age was 45 ±16 years. . 69 men and 84 women.	<p>What is the feasibility of a primary care physician performing HCU (hand carried cardiac ultrasound) examinations in an urban clinic that cares for underserved minority patients?</p> <p>What is the incidence of significant cardiovascular disease detected by these devices in this population?</p>	<p>27% of patients had none of the 5 recorded cardiac risk factors, whereas the percentages with 1, 2, or 3 risk factors were 69%, 26% and 6% respectively (figures not reported).</p> <p>There were a total of 27 major findings in 19 patients – a detection rate of 12.4%.</p> <p>No patient had more than 3 risk factors. Only 7 patients (5% of 153 participants) had a history of atherosclerotic heart disease. However 29 (25% of 153 participants) were being seen for a chief symptom that was cardiovascular or pulmonary.</p> <p>A statistically higher likelihood that patients presenting for a new or acute clinic visit had a major cardiac finding on their screening ultrasound examination compared with patients returning for a scheduled follow-up was reported in text but not supported with data.</p> <p>The likelihood of finding a major cardiac abnormality by HCU examination could not be predicted by history of cardiac disease,</p>	Kirkpatrick 2004	Non-comparative validation study (-)

					number of risk factors or age. Authors conclude that the low cost and portability of hand-carried cardiac ultrasound devices may them important tools for the early detection of cardiovascular disease in minority and underserved populations.		
Lacey 2004	Case study Includes audit of practices, patient postal survey and semi-structured interviews with staff. (+)	Project to improve provision of secondary prevention services. Involved one nurse and one exercise worker funded to facilitate better care by primary care staff. The 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. The project was conceived before the NSF publication and operated over the first years of its introduction. 11 GP practices from a second PCT in the same city were recruited as controls. Townsend deprivation scores for the intervention practices ranged from -4.3 to 4.7, a mean score of 1.1. The practice population contained few ethnic minorities. Control practices were matched as	11 intervention GP practices and 11 control GP practices in two socially deprived areas of the same city. 1044 of 1522 patients surveyed from practice CHD registers returned questionnaires regarding provision and uptake of services.	What is the effectiveness of a GP-based, 2-year intervention that provided additional resources in the form of one part-time specialist nurse and a part-time exercise worker to promote secondary prevention of CHD for patients with established disease, in an area of significant deprivation?	The audit revealed improved compliance with NSF practice guidelines on data collection after the project in several areas, including established protocols for identification of people with CHD, ability to identify patients prescribed statins, beta-blockers and ACE inhibitors and ability to monitor BP and cholesterol compliance. In all these areas intervention practices showed improvements from baseline, whereas control practices showed a static/deteriorating position. In the survey, 96% of intervention patients and 93% of controls reported receiving blood pressure checks in the past year. The difference was not statistically significant (p value not reported). 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	Lacey 2004	Evaluation (+) Audit of practices, patient postal survey. Semi-structured interviews with staff.

		<p>far as possible on deprivation indices with the intervention practices, although these characteristics have not been reported.</p> <p>Data collection took place between 1999 and 2001.</p>			<p>to be taken by controls 40.4% vs. 31.3%, p=0.003).</p>		
Macnee 1996	Case study (+)	<p>Screening sessions offered within a nurse-managed primary care clinic for the homeless. The sessions were provided by faculty and senior baccalaureate nursing students.</p> <p>Homeless clients were offered blood pressure, diabetes, anaemia, foot and tuberculosis screening.</p>	<p>214 homeless people. 133 were male (62%). Ages ranged from 13 to 79 years, although the majority was between the ages of 36 and 50. For blood pressure screening (n=131): 67% male; 21% 18-35yrs, 34% 36-50yrs, 28% 51-65yrs, 17% >65yrs.</p>	<p>Will the implementation or process of screening clinics promote utilisation by homeless individuals, including those who are not formally linked with an established primary care program? Will homeless individuals who are identified through screening as having abnormalities get follow-up care for evaluation of these abnormalities?</p>	<p>214 clients were screened in one of the five types of screening clinic during the 9 months of the study.</p> <p>Seventeen different clinics were held with client attendance ranging from 0 to 33 at any particular clinic. 88 (43%) of those screened had never been seen in the regular primary care clinic before.</p> <p>Results of the blood pressure screening showed 67 (51%) who were not previous clients of the clinic and 64 (49%) who were previous clients. 35 (27%) had abnormal results. 77% of those with high blood pressure readings received follow-up.</p> <p>26 (20%) had a previous history of hypertension. There was a high prevalence of the following risk factors: family history – 70 clients (53%), Heart disease – 40 (31%), Tobacco use – 71 (55%) and Alcohol/drug use – 56 (43%)</p> <p>Screening results for all five health problems found abnormalities in 46 (22%) of the clients who received screening. Also, 34 (74%) of those</p>	<p>US study in fairly small sample. However as services were offered free of charge this may be more relevant to a UK setting. Applicable to homeless populations only.</p>	<p>The number of people invited to participate or who could have participated is not reported so the characteristics of those who did not attend screening are not available.</p> <p>It is not clear how clients were reached. The intervention was designed to reach those not already attending the clinics, but information on how they were contacted is limited. It is reported that flyers were used to advertise the clinics, but there is no information on where these were displayed.</p> <p>Clients were offered incentives to participate in each screening session (eg free socks, orange juice, coffee).</p>

					clients who had abnormal findings had a previous history of the health problem and either had been lost to follow-up or had thought the problem had been resolved.		
Molokhia 2000	Case study (-)	Pilot study of cardiovascular risk assessment in Afro-Caribbean patients. Between September 1996 and September 1997, consecutive adult attendees of Afro-Caribbean origin presenting at two non-emergency booked sessions weekly at a city general practice for any reason were invited by the author (a clinical research fellow) to participate in cardiovascular risk assessment. This consisted of structured interviews, clinical examination and blood sampling. Mean Dundee risk ranks (based on age, sex, smoking history, diastolic blood pressure and cholesterol where available) were calculated with 1 being the highest risk and 100 the lowest.	98 Afro-Caribbeans attending an inner-city general practice in Lavender Hill, South London. Mean age was 41 years. 34 male and 64 female participants. 9% attended focus group	What are the cardiovascular risk factors and Dundee risk rank for Afro-Caribbeans?	92% of those invited participated in the risk assessments (98 of 107). Six patients declined (too busy n=1, social problems n=1, not interested n=2 and pregnant n=2) and three were excluded because of psychiatric illness. 67 patients had at least one risk factor for coronary heart disease and 50% of patients had >2 risk factors. Two patients had cholesterol greater than 5.8mmol/l, 66 had BMI greater than 25, 2 drank more than alcohol than the recommended weekly consumption, 25 were smokers, 9 had systolic BP \geq 160mmHg and 9 diastolic BP \geq 9, 25 had a family history of IHD, diabetes, stroke or PVD and 23 had medical history of these conditions. 57 were at exercise level 0 or 1 (ie no or mild exercise per week). Mean Dundee risk ranks were 69 in women and 73 in men. The mean combined rank was 70 for both sexes combined..	UK-based study likely to be applicable to similar populations but may be limited by small sample size.	Small pilot study. Sampling frame, methods for data collection and analysis not fully reported. Unclear if blood sampling was conducted for all patients. Unclear why patients were visiting GP or if cardiovascular health problems/risk had already been identified.
Osborn 2003	Case study (+)	Cardiovascular risk assessment (including a blood test) by a researcher at the patients' general practice.	495 patients from seven inner London general practices (182	Are people with serious mental illness less willing to participate in	There was no significant difference between the number of patients with or without psychosis who participated in screening for	UK-based study likely to be applicable.	GPs wrote to their patients to invite them but It is unclear how well the study was explained and this may

			<p>with psychosis and 313 without) invited for cardiovascular risk assessment at their GP practice. Of those invited, 177 were aged 30-39, 109 aged 40-49, 104 aged 50-59 and 105 aged 60-75. 242 (48.9%) were male. Of those participating, 48.6% aged 30-39, 39.4% aged 40-49, 45.2% aged 50-59 and 46.7% aged 60-75. 44.2% were male.</p>	<p>screening for cardiovascular disease risk?</p>	<p>cardiovascular risk.</p> <p>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.</p>		<p>have affected results. It is also unclear how long the patients were given to attend before being classed as non-participants.</p>
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Q1. Community Initiatives

First author and date	Study Design & Quality (++/+//-)	Intervention & Comparison (if applicable)	Study Population	Research question	Main results	Applicability	Confounders / Comments
Evidence of Efficacy (Internal Validity) for Workplace Screening							
Biswas	Case study (-)	The Well Man Clinic was set up in 1993 and was advertised with posters. The initial consultation was carried out by trained health care staff with follow-up by the Medical Officer, where appropriate. All consultations were voluntary. The initial 30 minute consultation included full medical and family history, height weight and blood pressure measurement, urinalysis and random total blood cholesterol and sugar. Peak flow recording and auditory examination were also made, as were recordings of personal habits. Health promotion was reinforced, and all participants given copies of their results and objectives agreed where appropriate. Following advertisement to	335 adult male members of a Doncaster prison both inmates and staff. Inmates: n=256. Mean age 32.3 (range 21-62) Prison staff = 47. Mean age 42.4 (range 24-64).	Aims were to establish a health screening clinic and evaluate uptake. To examine the CHD risk profile of a male prison population and compare this with their carers, the prison staff.	There was a 35% voluntary uptake of 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. Blood pressure (73 vs 78mmHg) and total cholesterol (4.4 vs 5.0mmol/l) were significantly higher in the Prison Officer group (p<).01 for each), but these differences were fully attributable to the age profile of the two groups. Calculations of coronary risk over the subsequent 10 years were similar, when adjusted for the age group differences (age adjusted risk-plus score	UK study likely to be applicable to similar populations.	It is not clear how the uptake rate was determined, as the number of potential participants has not been provided. The authors state that the prison holds up to 580 inmates, but the number during the study period is not given. The duration of the project is also not reported. Relevant outcomes include uptake and active interventions. However blood pressure, cholesterol and risk scores presented as means, so the exact number identified at risk cannot be determined. Limited patient demographic data.

		inmates, a number of requests to participate were received from the prison staff and the service therefore extended. Framingham cardiac risk scores were calculated.			was 3.5 and 3.3 in prisoners and staff respectively). 74% of prisoners were smokers compared to 24% prison staff. 8% had diabetes vs. 0% prison staff. 27% prisoners had a family history of CHD vs. 21% prison staff.		
Chatterjee 1997	Case study of screening between 1991 and 1993. (+)	Workplace health-promotion programme consisting of screening employees to assess coronary risk. Summary of results were given to participant and a copy posted to their general practitioner highlighting any abnormal finding with the request for further investigation. All abnormal cases were followed up by the company's medical officers.	13005 factory workers (Ford Motor Co Ltd) 34.6% salaried, 65.4% hourly. 93.4% men 6.6% women	The study's main aim was the primary and secondary prevention of CHD through modification of risk factors and health-related behaviours.	13005 people (40% of the workforce) participated. 307 participants (2.4%) had high cardiac risk scores and 1012 (7.8%) had medium risk scores. 4.0% men and 2.2% women had 'referral category' or 'high blood pressure' and 17% men and 7.2% women had observation or 'borderline blood pressure'.	UK study involving factory workers of all grades. Unclear the proportion of manual workers but 65.5% were paid hourly.	Potential volunteer bias. The study was publicised throughout the company but unclear exactly how many employees were aware of the screening in order to decide whether to participate. There is a potential conflict of interest as the author is chief medical officer of the Ford Motor Company Ltd. The author did not measure whether high-risk patients followed up with their GPs.
Hamilton 1997	Case study (+)	Open access blood pressure measurement scheme in Exeter, UK. Self-reading sphygmomanometers were placed in 13 public sites either in deprived areas or in facilities whose clientele were deprived or less likely to use primary care. Sites included post office, city council, charity shop, NHS walk-in centre,	Study aimed at people who were deprived, from deprived areas or less likely to use primary care. Of 758 users who fully completed proformas the median age of	Can open-access self-reading BP measurement detect previously unrecognised hypertension?	803 proformas were completed. By cross-referencing names and addresses 34 of these were identified as repeat users, leaving 769 first time users. Of these, 758 users wrote down their BP. 221 (29.2%) readings were above the action level. 122/221 users who had a reading above the action level provided an address. 58 gave consented access to their GP	UK-based study likely to be applicable for similar areas.	Direct observation showed that 'many' more people used the machines than completed proformas. Although machines were sited to facilitate use by those who were deprived or less likely to have opportunistic GP measurement, participant's characteristics were not collected so it cannot be confirmed if this aim was achieved. The authors were unable to follow-up all participants with action level BP as not all provided their address.

		<p>supermarket, Islamic centre, homeless centre and healthy living centre.</p> <p>Sites were open for a total of 146 machine weeks.</p>	<p>females was 50.5 years (interquartile range 34-63) and of male users 42 (29-56).</p>	<p>records. 36 of these (62%) had a BP measurement recorded in their GP notes in the 6 months after their use of the machine. Eleven new hypertensive's were identified (defined by primary care measurements above 160/100mmHg), 1.4% (95% CI 0.7 to 2.5) of the 769 first time total users.</p> <p>User acceptability was high amongst the 30 users randomly selected and interviewed. General practice replies were supportive. The authors conclude that open access sphygomanometry 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 if this approach reduces inequalities and is cost effective.</p>		
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Krieger 1999	RCT Individual (+)	<p>Seattle Hypertension Intervention Project from June 94 to October 96. Community health workers conducted blood pressure measurements at social service agencies, food banks, shelters, missions, public libraries, retail stores, shopping malls, community centers, motor vehicle licensing sites, employment security offices, post offices, local jail, and work release sites.</p> <p>The people with elevated blood pressure, identified from the above blood pressure measurements were eligible to participate in a randomised trial testing a tracking and outreach intervention. Participants received: i) Referral to medical care and if needed assistance in locating a provider; ii) an appointment made by the CHW; 3) appointment reminder letter; iv) follow-up to determine if appointment was kept; v) new appointment for each missed one (up to 3); and vi) assistance in</p>	<p>People from low income neighbourhoods in Seattle.</p> <p>Demographic characteristics of all persons whose blood pressure was measured (n=4761):</p> <p>42.8% aged 18-39, 41.3% aged 40-64 and 15.9% aged ≥ 65. 48.3% were Black, 67.4% Male. 46/2% had income less or equal to the federal poverty level. The majority had reached high school graduation or more (35.8% and 43.9% respectively).</p> <p>Demographic characteristics of RCT participants (n=421):</p>	Can a tracking and outreach intervention delivered by community health workers improve medical follow-up of persons whose elevated blood pressure was detected during blood pressure measurement at community sites?	<p>4761 received blood pressure measurements. Of these 31.4% had elevated blood pressure (≥140/90 mm Hg) and 10.7% had moderately or severely elevated BP (≥160/100 mmHg). 19.6% had not had their blood pressure checked within the last year.</p> <p>Among those with elevated blood pressure, 63% reported they had been told they had hypertension and 41% reported they were currently using blood pressure medications.</p> <p>738 people of the 4761 who received blood pressure measurements were eligible to participate in the RCT. 421 (55.5%) enrolled.</p> <p>The intervention increased the rate of follow-up with medical care by 39.4% (95%CI 14-71%, p=0.01) relative to usual care. 65% of the intervention group completed a medical appointment within 90 days of referral, whilst 46.7% of the usual care group did so (p=0.001). Absolute increase in follow-up was 18.4 per 100 persons served (95%CI – 8-33%) and the NNT to bring 1 person to care was 5 (95%CI 3-13).</p>	US study with low income predominantly black male sample. Applicable to similar groups in UK.	<p>No intention to treat analysis: the results of participants in the tracking and outreach study who were lost to follow-up were not analysed.</p> <p>Participants were paid \$25 for participating</p>
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		reducing barriers to care through referral to community transportation, child care, or other services.	24.9% aged 18-39, 56.8% aged 40-64 and 18.3% aged ≥ 65. 79.1% were Black, 72.2% Male. 66.3% had income less or equal to the federal poverty level. The majority had reached high school graduation or more (40.7% and 35.0% respectively).				
Margolis 2003	Case study (-)	<p>Worksite screening: Employee screening sessions at 14 business sites operated by African Americans (nearby businesses able to share a session). Businesses included barber and beauty shops, child care providers, taxi services, convenience stores and an auto service station.</p> <p>Participants were screened for weight, height, body fat, blood pressure and cholesterol and informed of their results. Participants were</p>	98 African American male and female workers in a low-income area (southeast Raleigh, US).	What is the effectiveness of a cardiovascular health screening programme with follow-up for employees in small local African American-owned businesses to reduce risk status and incidence of cardiovascular disease in African Americans?	<p>30 businesses participated and had an estimated total of 252 employees, of these 107 participated in screening (42%). The analysis is limited to the 98 African American participants.</p> <p>62% of the men and 46% of the women had at least one risk factor (high blood pressure, elevated or borderline total cholesterol, triglycerides or blood glucose, or Low HDL).</p> <p>Of the 53 at risk individuals, 13 (25%) were lost to follow up, and 18 declined follow up with</p>	US study. May be applicable to similar UK populations and settings..	<p>The sampling methods are ambiguous. The authors state 81 southeast Raleigh businesses were invited by writing to participate and followed up by face-to-face encounters. Businesses were recruited until 30 were enrolled. Unclear if 51 refused to participate or just that enough businesses had been recruited. 107 completed screening but results are also only presented for 98 African American employees. No reason is given for this.</p> <p>It is unclear if follow up was part of the intervention.</p> <p>Percentage body fat was not used as a criterion for referral for medical follow-up since the expected high prevalence of overweight would have resulted in a referral</p>

		<p>counselled immediately if needed and those identified at moderate or high-risk were offered a free follow-up visit to a physician.</p> <p>6 weeks after results distributed (2 weeks following screening,) at risk individuals were contacted for follow up and participants were contacted for up to two years to arrange physician visits. Information packets were provided, on a monthly basis (unclear for how long).</p>			<p>a physician.</p> <p>22 individuals completed physicians follow-up (26% of the at-risk men and 64% of the at-risk women). Of these 15 (68%) were encouraged to make additional medical visits. For the other 7, the physicians did not strongly recommend medical follow-up.</p>		<p>rate beyond the capacity of the project staff and budget. Elevated body fat which was evident in 90% of the women and 86% of the men.</p>
O'Loughlin 1996	<p>Controlled before and after study</p> <p>(-)</p>	<p>CVD risk factor screening of school employees. The sessions were free and assessed lifestyle behaviour and blood pressure and cholesterol measurements. Part of the Coeur en sante St-Louis du Parc programme.</p> <p>125/209 intervention workers in 8 elementary schools in St Louis du Parc area of Montreal participated, and 135 workers from 8 comparison schools also located in Montreal did</p>	<p>Employees in schools based in a low income multi-ethnic area - St Louis du Parc in Montreal.</p> <p>Intervention (screening) group: Mean age 43.9 (SD 10.1), 13.7% male. 58.1% with University educational</p>	<p>What is the short-term impact of CVD risk factor screening on self-reported smoking, leisure-time exercise behaviour, and fat consumption of personnel working in elementary schools in St Louis du Parc a low-income multi-ethnic neighbourhood?</p>	<p>209 intervention workers completed baseline questionnaires of whom 125 (59.8%) participated in the screening.</p> <p>Of the 125 subjects screened, 28.0% were referred to a physician for cholesterol follow-up and 5.6% for blood pressure follow-up (figures not reported).</p> <p>48.4% had less than 200mg/dl cholesterol levels. 31.4% \geq200mg/dl, and 19.8% \geq 240 mg/dl. 14.4% had blood pressure \geq140/90 mmHG.</p>	<p>Canadian study applicable to UK setting.</p> <p>However the study involved workers in a deprived area, but it is uncertain whether individuals themselves were deprived. More than 50% were professionals and had reached a high education level.</p>	<p>High attrition rate and an intention to treat analysis were not performed. Only subjects completing both baseline and follow-up results are included.</p> <p>The relevant results are not the primary outcome of the study. 209/286 returned baseline questionnaires. Of these 125 (59.8%) participated in the screening and completed the 4-month follow-up questionnaire. It difficult to determine from the reporting whether more than 125 were screened but not been included in the results because they did not return follow-up questionnaires.</p>

		<p>not receive screening.</p> <p>The focus of the study is the impact of screening on risk behaviour. This is not relevant to the review. Results shown here relate to the results from the intervention (screening) schools.</p>	<p>attainment 58.4% were teachers 41.6% support staff. 69.4% were married, 19.4% single and 11.3% separated, divorced, widowed.</p>		<p>55.2% had BMI <25, 19.2% BMI ≥25 <27, 25.6% ≥27.</p> <p>Risk factors (includes smokers, total cholesterol ≥200 mg/dl, blood pressure ≥140/90mmHG, and BMI ≥25): 25.2% had 0 CVD risk factors, 35.0% had 1, 28.5% had 2, 9.8% had 3, 1.6% had 4.</p>		
Williams 2001	<p>Uncontrolled before and after study</p> <p>(-)</p>	<p>Health risk appraisal screening and risk reduction programme. Healthier People Health Risk Appraisal (HPHRA) and CVD screening with counselling was offered to day care workers in 1995 and in 1997.</p> <p>By early 1997 the school of nursing researchers had an almost 3 year continuous relationship with the day care centres and used recruitment materials with gender specific culturally appropriate pictures.</p> <p>Any participant with an elevated measured blood pressure or high cholesterol was referred for further testing.</p>	<p>69 Minority workers from 9 child-day care centers that were part of a non-profit day care center corporation.</p> <p>All the participants were black and the majority were women. Ages varied from 24 to 67 years with a median age of 35 and a mean age of 40.</p>	<p>Does repeated and continuous interaction with prevention focused, advanced practice nurses change the response level of a minority worksite employee group to CVD screening programs?</p> <p>The purpose of the study was to examine the impact of the HPHRA as a culturally appropriate recruitment strategy to involve a group of child day care workers in a cardiovascular disease screening and risk reduction program.</p>	<p>Participation rates in the project increased from 26% of the day care workers to 73% when long-term relationships were built on culturally appropriate strategies.</p> <p>In 1995 29 (34%) of the agency's 84 staff members completed the HPHRA form of whom just 22 completed CVD screening (26%). In 1997 61/84 staff participated in all phases of the HPHRA-CVD screening programme (73%). 14 of these people had participated in 1995.</p> <p>The majority of the participants seen initially in either 1995 or 1997 reported the combined advantage of convenience (offered at their worksite) and low cost (free). The rest of the participants expressed a desire to check their CVD</p>	<p>US study with a different health-care system. The intervention was targeted towards worksites employing low-income minority workers.</p>	<p>Poorly reported study. Authors conducted interviews to determine reasons for participating or not. However limited information is provided on the interview methods and data collection. It is unclear how reasons for not participating could have been collected as it appears they only interviewed screening participants. Reasons are also not reported separately for 1995 and 1997.</p> <p>Limited information on recruitment methods in 1995 makes it difficult to compare the methods used in 1997.</p> <p>Different workers participated in 1997 than 1995. No control group, so unclear whether factors other than the intervention impacted on participation rates.</p>

		Participants in 1995 and/or 1997 were followed up in 1998 to determine impact on risk factors, however these results are not relevant to the review so are not presented.			status because they had no previous opportunity to receive the combined screening of the HPHRA, blood pressure, height, weight and cholesterol measures.		
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Q1. Multiple interventions – Wider health promotion projects with an element of assessing risk

First author and date	Study Design & Quality (++)/+/(-)	Intervention & Comparison (if applicable)	Study population	Research question	Main results	Applicability	Confounders / Comments
Evidence of Efficacy (Internal Validity)							
Byers 1999	Case study (+)	<p>Phase 1 of WISEWOMAN project (Well-Integrated Screening and Evaluation for Women in Massachusetts, Arizona and North Carolina).</p> <p>CVD screening and intervention activities were added to state breast and cervical cancer screening programmes, March 1997 to May 1998 in Arizona, Dec 1995 to Nov 1996 in N Carolina and for Massachusetts recruitment Jan 1996 and baseline screening Mar to July 2006.</p> <p>The project relied on both paid and volunteer staff. Women enrolled through minimum intervention sites received a baseline screening for CVD risk factors plus minimal intervention (on-site counselling education, referral and follow-up) or</p>	<p>4842 women who are financially disadvantaged or without health insurance. Women were aged 50 or more.</p> <p>1586 in Massachusetts. 84% aged 50-64. 80% white, 3% Black, 11% Hispanic, 6% other.</p> <p>1093 in Arizona, 91% aged 50-64. 14% White, 1% Black, 86% Hispanic, 0% other.</p>	What is the feasibility and effectiveness of adding a CVD prevention component to a breast and cervical cancer screening program for financially disadvantaged women?	<p>Baseline screenings of 4842 women revealed a high prevalence of CVD risk factors.</p> <p>High cholesterol (≥ 240 mg/dL) was more prevalent among women in North Carolina (40%) and Massachusetts (40%) than in Arizona (29%).</p> <p>Hypertension ($\geq 140/90$ mmHg) was more prevalent among women in North Carolina 63% than Massachusetts (47%) or in Arizona (34%). Overweight (BMI ≥ 25) highest in Arizona (83%) than North Carolina (76%) or Massachusetts (66%).</p> <p>The authors conclude it is appropriate to expand breast and cervical cancer screening programs to include screening for CVD.</p>	US study in women who are financially disadvantaged or without health insurance. May be applicable to similar UK populations.	Doesn't report numbers invited to participate. Referral data not reported.

		enhanced intervention (activities to improve nutrition and physical activity)	2163 in North Carolina. 60% aged 50-64. 59% White, 35% Black, 4% Hispanic, 1% other.				
Bader 2006	Case study (+)	A mosque campaign conducted in 28 Mosques and repeated three times during the years 1999/00, 2000/01 and 2001/02. The campaign consisted of a lecture on the main CVD risk factors for women and prevention opportunities by a Turkish peer-educator. A blood pressure measurement was offered and a second-year resident provided medical consultations. If the condition of the participant was serious she was referred to her physician.	878 female Turkish immigrants in year 1, 658 in year 2 and 910 in year 3. The study was conducted in Tyrol, Austria. The majority of participants were between 30 and 39 years old.	Can a Turkish language CVD prevention programme improve knowledge of risk factors and minimise ethnic differences in participation rates for prevention programmes for Turkish women? The Hodja of each mosque was asked to distribute the invitations to the male spouses or relatives of the female target group.	878 women attended in year 1, 658 in year 2 and 910 in year 3. Participation with blood pressure reading at each time point was 43%, 82% and 86% respectively. 49 (13.5%) had raised systolic and/or diastolic blood pressure in year 1, 115 (17.5%) in year 2 and 125 (13.7%) in year 3.	Study conducted in Austria which has a similar healthcare system. Likely to be relevant for similar UK ethnic minorities.	The main focus of the study was education on CVD risk factors for women plus prevention opportunities. Unclear how many women were asked to participate, as invitations were distributed to the male spouses of the target group. The number of men who received these invitations was not reported. The number of physician referrals was not reported.

Huckerby 2006	Case study (+)	<p>Six culturally-adapted, pharmacist-led group sessions in community groups to raise awareness of medicines.</p> <p>Community groups were based in the Dudley Beacon and Primary Care Trust and adjoining Dudley South PCT. The six locations were Halesowen Yemeni Community (female), Halesowen Yemeni Community (male), Dudley Muslim Association, Dudley Caribbean Association, Sri Krishna Temple Day Care Centre, and Guru Nanak Singh Sabha Community Centre.</p> <p>The sessions were delivered in the appropriate language. Also, participants were offered the opportunity to have a face-to-face medication review that included blood pressure monitoring with follow-up or referral.</p>	125 people from black and minority communities (including Yemeni, Muslim, Caribbean and Sikh).	What are the current levels of patient awareness and interest in health care in black and minority ethnic communities?	<p>Face-to-face medication reviews were carried out in 70 of the 125 attendees (56%).</p> <p>Of these, 20 (29%) revealed patients with uncontrolled hypertension. Significantly, within the Caribbean Association, 15 out of 26 participants (56%) had blood pressure greater than 150/90mmHg.</p> <p>Participants with readings >150/90mmHg were given advice and referred to their GP, practice-based pharmacist / practice nurse.</p> <p>Verbal feedback at the end of the sessions revealed that participants appreciated having their blood pressure taken and were keen for further sessions to be arranged in the future. They also expressed an interest in cholesterol measurements.</p>	UK study applicable to ethnic communities.	The use of evaluation forms by participants was not successful, probably owing to language difficulties. Results are not provided.
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Oexmann 2001	Case study (-)	Intervention entitled 'Lighten Up' aimed to reach the medically/underserved in North and South Carolina, USA. The intervention included a baseline health check (week 1), eight educational sessions (weeks 2-9) combining study of scripture and health messages, a short-term health check (week 10) and a long-term health check (1 year).	Baseline and 10-week data obtained for 381 participants, comprising 61% black and 83% women. 43% completed 1 year health check: 64% black, 82% women, mean age 57.	Not clearly defined but assessment of church-based intervention to decrease cardiovascular risk through lifestyle modification	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.	Limited. Focus of the study was the impact of education sessions to reduce risk factors. No mention of referring patients to health care services.	Unclear whether identification of risk was performed as a baseline measure for assessment of the impact of educational sessions, or as part of the intervention. Unclear how many were offered the intervention.
Will 2004	Case study (-)	Phase 2 expansion of the WISEWOMAN project (Well-Integrated Screening and Evaluation for Women in Massachusetts, Arizona and North Carolina). Presents screening data from 9 projects (North Carolina, Iowa, Alaska, Connecticut, Massachusetts, Michigan, Nebraska, South Dakota and SEARHC). 1st Jan 2002 – 31 Dec 2002 Data for California, Illinois and Vermont was not available at the time.	8164 women who are financially disadvantaged or without health insurance. Women aged 40-64. Women were screened from a variety of racial / ethnic groups including white, black, Hispanic/Latina,	How effective is the WISEWOMAN Project in screening and identifying risk in poor and minority women?	In 2002, 8164 women were screened in 9 states. 23% of women had high total cholesterol (≥ 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. Authors conclude the WISEWOMAN projects have been successful at reaching financially disadvantaged and minority women who are at high risk for chronic diseases.	US study in women who are financially disadvantaged or without health insurance. May be applicable to similar UK populations.	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 do state that most variables had few missing responses. It is not reported how many women were actually offered screening. Referral data is not reported, although the authors state that women who had high blood pressure, high cholesterol or high blood glucose were referred for a diagnostic examination.

			American Indian/Alaska Native and Asian.				
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Q1. Enablers and barriers to identifying people at risk or with established CHD

Author	Study Design & Quality (++)/(-)	Study Population	Research Question	Results	Applicability	Confounders / Comments
Wright 2006	Qualitative study Interviews (++)	Purposive sample of 31 patients with severe mental illnesses and staff from primary care (n=10) and community mental health teams (n=25) in North Central London. Patients: 18 males, 13 females, aged between 28 and 67 years. Health professional: 14 males and 21 females, aged between 24 and	What are the views of service users (people with SMI) and professionals (i.e. primary care and community mental health staff) on screening for CHD risk factors and interventions for primary prevention of CHD? What are opinions regarding existing practice, obstacles to accessing care, preferred setting and different service models?	Cardiovascular risk factors in people with SMI were of concern to participants. The most commonly perceived obstacles to CHD screening were: <ul style="list-style-type: none"> • Lack of appropriate resources in existing services – e.g. time, trained staff • 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 favored CHD screening in their CMHT. Problems with both approaches were	Well conducted UK study involving key stakeholders likely to be applicable to similar populations, although sample size is small.	The authors acknowledge the possibility of response bias, I that service users may have been more likely to agree to participate in an interview. Thus the opinions of those who do not view the prevention of CHD in SMI as a high priority may be underrepresented.

		57 years.		<p>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.</p> <p>Authors conclude that management of physical health care for people with SMI requires complex solutions that cross the primary-secondary care interface. Responses suggest that neither primary nor secondary care services on their own can provide a comprehensive service for all patients. The 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.</p>		
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Q2. Compliance with statins or lipid lowering therapy

First author & date	Study Design & Quality (++)/+/(-)	Intervention & Comparison (if applicable)	Study Population	Research Question	Main results	Applicability	Confounders / Comments
Evidence of Efficacy (Internal Validity)							
Ali 2003	Uncontrolled before and after study 6 months follow-up (-)	Non-adherent patients were identified and invited to attend a patient forum held by individual pharmacies, to educate patients about dyslipidemias, various pharmaceutical therapies, lifestyle and nutrition and to invite them to participate in the study. Education was provided verbally and via pamphlets. 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 study was conducted in Quebec, Canada.	149 patients with hypercholesterolemia receiving lipid lowering agents but not adherent. Men aged 45 or older and women aged 55 or older who were deemed non-compliant with medication and who had at least two other risk factors were eligible.	What is the impact of a community pharmacist program on treatment compliance and plasma cholesterol levels in non-compliant patients with hypercholesterolemia?	The number of compliant patients increased significantly by 15.3% from 37 patients (shown in figure 2 as 40.7% compliant patients at pretest) to 51 patients, respectively (shown in figure 2 56% compliant patients at post-test) ($p < 0.05$). The average days per refill was reduced by 11 days on average from mean 49 days \pm SD 26.2 to 38 \pm 12 days ($p < 0.001$). Levels of total cholesterol, triglycerides and LDLs were reduced by 6%, 16.2% and 8.5% ($p = 0.001, 0.01, 0.01$) respectively.	Whilst the intervention and location are likely to be applicable to a UK setting, the lack of patient characteristics and poor quality of the study limits generalisability.	Very poor quality study. This paper does not give a baseline number of patients enrolled in the study and total study population is never made clear. It appears from Table 1 that the initial enrolment was 149 (number of subjects reported at follow-up = 135 with a note stating that 14 patients were lost to follow-up). However, figure 2 (pre- and post-intervention compliance rates) equates 51 patients to 56% of total and 37 patients to 40.7% of total, indicating patient numbers to be 91. Questionnaire indicates the study included at least 130 patients. Demographic characteristics of participants are not reported. Paper is written and funded by Pfizer Canada. Compliance was measured by drug renewal rates and defined as those renewing their prescription with a deviation of less than 20% from the prescription renewal date.

Bluml 2000	Observational study (-)	<p>Project ImPACT: A community pharmacy-based demonstration project from March 1996 until October 1999. 32 community pharmacy practice sites were selected to participate of which 6 were unable to implement the project. The 26 community-based ambulatory care pharmacies were based in: independent, chain-professional, chain-grocery store, home health / home infusion, clinic, health maintenance organisation/managed care. Patients attended an initial visit and consultation with the pharmacist and were asked to make follow-up visits every month for the first 3 months and quarterly thereafter. They were actively involved in their therapy, treatment plans and goal settings and kept informed about their progress.</p>	<p>26 pharmacy practice sites in 12 US states.</p> <p>574 patients with either newly diagnosed dyslipidemia or already receiving lipid-lowering medications but were poorly controlled. Patients were identified through referrals from physicians or health care providers, the project pharmacists or patient self-referral. 397 completed the entire study. Results are based on completers. 51.6% female, average age was 57 years. 84.9% were Caucasian, 6% African American, 0.2% Hispanic and 8.1% unspecified.</p>	<p>Do pharmacists, working collaboratively with patients and physicians and having immediate access to objective point-of-care patient data, promote patient persistence and compliance with prescribed dyslipidemic therapy to enable patients to achieve their national cholesterol education program (NCEP) goals.</p>	<p>In a population of 397 patients over an average period of 24.6 months, observed rates for persistence and compliance with medication therapy was 93.6% and 90.1% respectively, and 62.5% of patients had reached and were maintained at their NCEP lipid goal at the end of the project.</p>	<p>Limited applicability on the basis of quality, measure of compliance and not targeted towards disadvantaged groups.</p>	<p>Very poor quality study.</p> <p>Unclear how data was collected, although outcome measures were defined.</p> <p>Results are analysed separately for those who completed the two-year study period which is likely to bias the results as those who dropped out of the study were not included in the results for persistence and compliance.</p> <p>Compliance is calculated as the number of occurrences of compliance recorded in each visit by the total number of visits for patients on medications. This doesn't actually present the number of compliant patients, but compliance per visit. Therefore, it is not clear how many patients were complying and at what stage in the study – e.g. the compliance could have been within the first few months and declined during the two years.</p> <p>Study suffers from insufficient reporting of the methods making it difficult to assess quality.</p> <p>Lack of control group means that it is unclear whether factors other than the intervention produced the results.</p>
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Faulkner 2000	RCT Individual 2 years follow-up (-)	15 patients each in the intervention and control. Intervention: A pharmacist telephoned patients at their home every week for 12 weeks. Emphasis was placed 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. Control: No telephone contact.	30 patients who had undergone CABG surgery or PTCA in the previous 7-30 days and had hypercholesterolemia (baseline fasting LDL above 130mg/dl. Patients were recruited from a hospital in Omaha, Nebraska. All patients were prescribed Lovostatin and Colestipol twice/day. Intervention: 8 men, 7 women. 11 Caucasian, 4 African American. Mean age 64 SD ± 12. Mean yrs in school 11.9 SD 2.4. Control: 9 men, 6 women. 10 Caucasian, 5 African American. Mean age 61 SD ± 12. Mean yrs in school 11.7 SD ±2.4.	What is the impact of personalised telephone follow-up on the rate of compliance in high-risk, hypercholesterolemic patients receiving combination drug therapy?	There were no statistically significant differences in compliance at 6 and 12 weeks. Significant results were seen after 2 years between intervention and controls. 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 lovostatin at 2 years: intervention = 63%, control 39% (p<0.05). The number of compliant patients (≥80% of prescriptions filled) was also significantly greater in the telephone contact group. Lovastatin compliant patients at two years: 9 intervention patients, 4 controls (p<0.05). Compliance with colestipol: 7 intervention patients, 1 control (p<0.05). Authors also comment that once a patient was found to be non-compliant during the study they stayed that way.	US study. Although intervention is likely to be applicable to UK, the results have limited applicability to disadvantaged populations. Most were Caucasian and subjects had to be able to read English for inclusion.	Very small study - each arm has only 15 patients. Therefore measured and unmeasured participant characteristics may not have been distributed evenly. The sample size also limits the power of the study. Whilst a power calculation is not fully presented the authors report the power to be 27% with lovostatin and 33% with Colestipol at 1 year. Compliance assessed by pill and packet counts.
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Guthrie 2001	RCT Individual 6 months follow-up (-)	10,335 participants received the Intervention (of which 3635 provided 6 month compliance data) and 2765 the control (913 supplied 6 month compliance data). Intervention: Telephone reminders at weeks 2 and 8 and postcards at week 4 plus months 4 and 5 reinforcing messages about coronary risk reduction and taking medications as prescribed. Comparison: Usual care (postcard reminders at 4 and 5 months)	2708 community-based physicians enrolled 13,100 patients at increased risk for a first MI and with elevated total cholesterol. 51.1% female and 79.9% white. 45.8% unemployed, 90.2% educated to high school level or more. Income varied from less than \$15,000 to more than \$100,000. 20.6% had an annual income less than \$15,000, and 58.2% annual salary was above \$25,000.	What is the effect of postal and telephone reminders and baseline patient characteristics on reported compliance with statin treatment. Also, is compliance associated with the adoption of other lifestyle modifications?	There was no meaningful difference between groups in medication compliance: 2897 (79.7%) of intervention patients reported they were taking pravastatin as prescribed, compared with 707 (77.4%) of usual care patients. 540 (14.9%) reported they were not taking pravastatin as prescribed compared to 150 (16.4%) of usual care.	Limited applicability to UK disadvantaged groups. US study in which most patients were white and salaries more than \$25,000. Medicaid recipients were excluded.	Very poor quality study. High attrition rate and no ITT. Results are only presented for the 4548 that completed 6 month follow-up surveys (35% of enrollees). The authors state that percentages may not sum to 100% because of missing values or multiple responses. Medication compliance is measured by patients self-reports. It is unclear who exactly delivered the reminders. The study was run and funded by a pharmaceutical company, and physicians received honoraria for enrolling patients.
Gonzalez 2005	Uncontrolled before and after study. 1 year follow-up (+)	Nurse-led patient education in a Heart Failure outpatient clinic in Badalona Spain. Once admitted to the clinic patients were visited by a nurse at least every 3 months and by doctors every 6 months. At every visit the nurse checked patients' lifestyle habits, treatment knowledge	298 heart failure patients attending a heart failure outpatient clinic. 73.4% male, mean age 65 years ± 10.5.	What does nurse education achieve in an outpatient heart failure population?	No significant differences in treatment compliance or continuation of written prescriptions were found. 92.3% were fully compliant at the first visit and 88.3% at 1 year (p=0.22). 69.8% stated they always carry on written prescription at first visit compared to 63.4% at 1 year (p=0.56).	Intervention is applicable to UK setting, but may not be relevant to disadvantaged groups. Unclear whether prescribed drugs were statins.	Compliance was self-reported so measures may be inaccurate. Difficult to determine whether results were due to the intervention as no comparison group used. Limited reporting of baseline characteristics. It is not reported whether there was any loss to follow-up. Drugs being taken are not reported.

		and compliance, tried to reinforce self-care behaviour and re-instructed patients about the disease. Increased involvement of patient's families in the education was encouraged. Face to face education was reinforced with printed leaflets for patients and their families and posters in the waiting room.					
Lopez-Cabezas 2006	RCT Individual Follow-up at 2, 6 and 12 months (-)	70 were allocated to the intervention group and 64 to the control. Intervention: post-discharge pharmaceutical care consisting of education on the day of discharge regarding 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	134 patients admitted to hospital in Badalona Spain for heart failure. Patients were elderly (intervention mean age =75.3 SD 8.4, control = 76.1 SD 9.4). Education levels were fairly low - only 6 (8.7%) of interventions and 4 (6.7%) of controls had secondary/ university education.	What is the efficacy of a multi factorial educational intervention carried out by a pharmacist in patients with heart failure?	The patients in the intervention group had a greater compliance degree than the patients in the control group. Specifically, compliance (i.e. percentage of reliable patients) 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). Authors conclude post-discharge pharmaceutical care allows for reducing the number of new admissions in patients with heart failure, the total days of hospital stay and improves treatment compliance without increasing the costs of care.	Spanish study but intervention likely to be applicable to UK setting. Results particularly relevant for groups with low education levels.	Poor follow-up for the compliance outcome measure. At 2 months information on compliance was available for just 67% of controls and 73% intervention; 45% and 64% of controls and intervention respectively at 6 months; and just 36% of controls and 57.0% of intervention patients at 12 months. It has not been reported whether an intention-to-treat analysis was performed. The type of drugs prescribed is not reported. Compliance measured using tablet accountability method. Patients were classified in three categories. Reliable: taking 95-100% of prescribed doses. Partially reliable: taking 85-95% of the prescribed doses. Non-reliable: taking less than 85% of the prescribed doses.

		<p>months, to strengthen the intervention and solve any problems that could have arisen.</p> <p>Control: Standard care.</p> <p>60 patients were required in each group for 80% power to obtain a statistically significant result for the outcome of mean intervention group admissions</p>					
Mulhstein 2001	<p>observational study</p> <p>Average follow-up of 3 years (range 2 to 4.6 years)</p> <p>(-)</p>	<p>Prescription for statin therapy at the time of initial hospital discharge.</p> <p>The study prospectively followed hospital patients with severe CAD and met the National Cholesterol Education Project guidelines for statin therapy, some of whom were prescribed statin therapy at discharge.</p> <p>Prescription of statin agents at the time of discharge from the index hospitalization was determined from a hospital wide clinical database. After discharge patients were</p>	<p>600 patients with severe CAD and undergoing coronary arteriography at a hospital in Salt Lake City, Utah were enrolled in the study.</p> <p>78% male, mean age 65 (range 36-93).</p> <p>The analysis of results is based on 343 living, contacted patients at follow-up.</p>	<p>What are the potential effects on long-term medication compliance and clinical outcome of discharge prescription of statin agents in patients hospitalized with an angiographic diagnosis of coronary artery disease?</p>	<p>Overall, 105/600 patients (18%) were discharged after the initial hospitalization with a prescription for a statin medication.</p> <p>Of the 536 living subjects, 343 (64%) were contacted by telephone and follow-up medication histories obtained. 65 had been prescribed statin at discharge and 278 had not.</p> <p>A total of 162 (47%) of those surveyed were regularly taking a prescription at follow-up.</p> <p>Long-term statin compliance was significantly higher among patients initially discharged with a statin prescription than those who were not (77% versus. 40%, $p < 0.001$)</p>	<p>US study likely to be generalisable to a UK setting. However, the intervention was not targeted to disadvantaged groups which may limit applicability to these populations.</p>	<p>Poorly reported study. High attrition. Of 600 enrolled, 64 (11%) patients died and 193 (36%) were not contactable for follow-up. Analysis based on 343 living, contacted patients.</p> <p>No exact follow up time given (varied from 2 – 4.6 years) and, follow-up measure is patient self-reported statin compliance at one time point.</p> <p>Study appears to measure whether compliance is higher in the 65 living patients who were prescribed statins on discharge than in the 278 who were not. The implication is that all 278 were prescribed statins at some point post-discharge (see para 1 of Discussion where the authors talk about delayed initiation of statin therapy) but this is never clearly stated and there are no data on length of delay.</p> <p>The clinical and demographic</p>

		treated as seen fit by their primary physicians. After more than 2 years follow up they were contacted by a telephone survey. Survival status, and medication history was obtained, and comparisons made between those who were prescribed statins at discharge and those who were not.			The authors conclude that after angiographic diagnosis of CAD, prescription of appropriate statin therapy at the time of hospital discharge improves long-term statin compliance.		characteristics of the two groups are not provided and it is not clear how many patients from each group died before follow-up. Whilst not directly relevant to the reported outcomes, it is worthwhile noting (as an indicator of quality) that the data provided in table 2 on mortality at follow-up is for patients the authors state are still alive at the time!
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Q2. Retention within services

First Author & Date	Study Design & Quality (++)/+-)	Intervention & Comparison (if applicable)	Study Population	Research Question / Objective	Main Results	Applicability	Confounders / Comments
Evidence of Efficacy (Internal Validity)							
Beswick 2004	Systematic review. Literature search to 2001. (+)	This review 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	Patients with myocardial infarction, CABG or PTCA, with heart failure or angina, or coronary heart disease. The studies identified did not target	To assess the effectiveness of methods for increasing patient adherence to cardiac rehabilitation and to suggest areas for further research.	The systematic review identified few studies of sufficient quality to assess the effectiveness of interventions to improve adherence to 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 is most likely to be effective in improving specific aspects of outpatient cardiac	The interventions are likely to be applicable to UK settings, but may have limited relevance to disadvantaged groups as these were not covered in the identified	Two studies were conducted in the UK. The majority of studies were from the US, plus Canada and Argentina. Just 6 studies were published since 1995.

		<p>review of interventions to improve uptake with cardiac rehabilitation programmes. See Q3 for the results regarding adherence.</p> <p>All studies reporting evaluations of interventions to increase adherence to cardiac rehabilitation (CR). The following interventions identified were:</p> <ul style="list-style-type: none"> • Formal patient commitment • Spouse or family involvement • Strategies to aid self-management • Educational interventions • Psychological intervention • Women-only and low-intensity exercise programmes • Including recreational activities and sports in the adherence strategy 	<p>specific under-represented groups.</p>		<p>rehabilitation, including exercise and diet.</p> <p>Patient commitment to attend did not suggest benefit in the promotion of adherence to aspects of outpatient cardiac rehabilitation.</p> <p>Evidence for the benefit of spouse or family involvement in increasing rehabilitation adherence was limited by the designs of the studies.</p> <p>Educational interventions to improve adherence to CR components gave little encouragement (4 studies). One RCT found the effect of a pre-discharge videotaped educational intervention was effective in improving exercise and dietary compliance. Although this is likely to be of benefit in the early phases of rehabilitation it is likely to have limited value in the promotion of adherence to outpatient cardiac rehabilitation. The study did suggest that presentation of information in a format describing recovery based on a coping approach may be most effective. The importance of the method of dissemination of educational information was also suggested by a before-and-after study showing benefit for a structured teaching approach.</p> <p>No benefits on attendance at an exercise programme were seen in 2 RCTs assessing telephone interventions.</p> <p>One non-randomised study reported</p>	<p>studies.</p>	
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					<p>that a psychological intervention aimed at improving adherence attended more cardiac rehabilitation exercise sessions, but may be due to the extra requirement to attend the rehabilitation centre.</p> <p>No conclusions can be drawn on the inclusion of recreational activities in the CR programme (1 UK study) or the introduction of programmes designed specifically for women as due to the limited information in the two reports.</p>		
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Question 3 – Interventions to improve access to services for people at risk of or with established CHD

First A & Date	Study Design & Quality (++)/+/(-)	Intervention & comparison (if used)	Study population	Research question	Main results	Applicability	Confounders / Comments
Evidence of Efficacy (Internal Validity)							
Beswick 2004	Systematic review. Literature search to 2001. (+)	This review 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. See Q2 for the results regarding uptake. All studies reporting evaluations of interventions to increase uptake of cardiac rehabilitation were included. The following interventions identified were: <ul style="list-style-type: none"> Improving 	Patients with myocardial infarction, CABG or PTCA, with heart failure or angina, or coronary heart disease. The studies identified did not target specific under-represented groups.	What are appropriate methods for increasing patient use of outpatient cardiac rehabilitation and what areas merit further research?	Few studies aimed at improving uptake of outpatient cardiac rehabilitation were found. The evidence for benefits from motivational communications was reasonably good, with improvements in uptake of outpatient cardiac rehabilitation and heart groups shown in 2 RCTs and one before-and-after study. Evidence from three included studies suggested that approaches aimed at motivating patients may be of value in improving the uptake of cardiac rehabilitation. Improvements in uptake of outpatient cardiac rehabilitation and heart groups were shown in two randomised trials and one before and after study. Methods of communication used were written letters, pamphlets or conversation with a professional. In the one UK RCT motivational letters were sent to patients at 3 days and 3 weeks post myocardial infarction. The letters were based on theory of planned behaviour and designed to influence acceptance and attendance, although the authors note the intervention may have been interpreted as a fear message.	The interventions are likely to be applicable to UK settings, but may have limited relevance to disadvantaged groups as these were not covered in the identified studies.	4 out of the 8 studies were UK-based. The remaining trials were conducted in Germany, Australia and USA. One study was published before 1995. Authors highlight the need for trials of interventions applicable to all patients and targeting specific under-represented groups.

		<p>coordination of post-discharge care</p> <ul style="list-style-type: none"> • Motivational communications • Lay volunteers • Healthcare professional-led interventions at the patient level 			<p>A multifaceted approach to the coordination of transfer of care from hospital to general practice including patient self-management was effective in improving cardiac rehabilitation uptake in a UK-based RCT. The intervention consisted of liaison nurse encouragement for patient to see practice nurse after discharge, liaison support for practice nurses, and guidance for patients by means of a personal record card. Attendance at one or more cardiac rehabilitation sessions was significantly increased in the intervention group. 42% of intervention patients attended at least one outpatient session compared with 24% of controls ($p < 0.001$). The importance of particular aspects of the intervention was not assessed separately. Issues relating to study quality limit further support from two non-randomised trials.</p> <p>Regular support and practice assistance from lay volunteers was effective in improving uptake of outpatient cardiac rehabilitation (CR) in a non-randomised UK trial. Patients who were offered assistance of a patient who had previously attended CR 71% attended a first session of the outpatient cardiac rehabilitation compared with 47% in the control district ($p = 0.02$).</p> <p>No conclusions can be drawn on the effectiveness of an intensive home-</p>	
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					<p>based nurse-led approach in promoting outpatient cardiac rehabilitation uptake, owing to the limited information in the one report.</p> <p>The review also considered research aimed at improving patient uptake by intervening at the level of healthcare professionals. 6 studies were identified, of which three were also included in the results described above. The value of physician endorsement in encouraging patient participation in CR or interventions to improve the referral process was not confirmed.</p>		
Krieger 1999	RCT Individual (+)	<p>Tracking and outreach intervention delivered by community health workers (CHW). Blood pressure measurements were conducted in various community sites (see Q1 community initiatives).</p> <p>Persons with elevated blood pressure were eligible to participate in a randomised trial: Participants received either usual referral or the following enhanced referral intervention: i) Referral to medical care and if needed assistance in locating a provider; ii) an appointment made by the CHW; 3) appointment reminder</p>	<p>People from low income neighbourhoods in Seattle.</p> <p>Demographic characteristics of RCT participants: 24.9% aged 18-39, 56.8% aged 40-64 and 18.3% aged ≥ 65. 79.1% were black, 72.2% male. 66.3% had income less or equal to the federal poverty level. The majority had reached high</p>	Can a tracking and outreach intervention delivered by community health workers improve medical follow-up of persons whose elevated blood pressure was detected during blood pressure measurement at community sites?	<p>738 people were eligible to participate in the RCT of whom 421 (55.5%) enrolled.</p> <p>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.</p> <p>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).</p> <p>Absolute increase in follow-up was 18.4 per 100 persons served (95%CI 8 to 33%) and the number needed to treat to bring 1 person to care was 5 (95%CI 3 to 13).</p>	US study with low-income predominantly black male sample may be applicable to similar groups in UK.	No intention to treat analysis: the results of participants in the tracking and outreach study who were lost to follow-up were not analysed.

		letter; iv) follow-up to determine if appointment was kept; v) new appointment for each missed one (up to 3); and vi) assistance in reducing barriers to care through referral to community transportation, child care, or other services.	school graduation or more (40.7% and 35.0% respectively).				
Lacey 2004	Case study Audit (in 1999 and 2001), patient survey and interviews (+)	<p>Intervention: British Heart Foundation funded initiative over two years. The project aimed to improve provision of secondary prevention services among 11 GP practices in an area of deprivation. The project funded one nurse and one exercise worker to facilitate better care by primary care staff.</p> <p>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</p>	<p>11 intervention GP practices and 11 control GP practices in two socially deprived areas of the same city. 1044 of 1522 patients surveyed from practice CHD registers returned questionnaires regarding provision and uptake of services.</p> <p>Townsend deprivation scores for the intervention practices ranged from - 4.3 to 4.7, a mean score of 1.1. The</p>	<p>What is the effectiveness of a GP-based, 2-year intervention that provided additional resources in the form of one part-time specialist nurse and a part-time exercise worker to promote secondary prevention of CHD for patients with established disease, in an area of significant deprivation?</p>	<p>Both intervention and control practices showed improvements in secondary prevention services during the 2-year period, but intervention practices showed somewhat greater gains than controls.</p> <p>The greatest change was observable in cardiac rehabilitation provision, with seven of the 11 responding intervention practices offering such a service after the project where none had done so before. None of the control practices offered cardiac rehabilitation before or after the project.</p>	<p>UK study likely to be applicable to similar areas.</p>	<p>Whilst the study describes a project to assist of practices in increasing their provision of services, data are not presented on whether this increased access/uptake of services by disadvantaged groups.</p> <p>The authors state that the project and its evaluation took place against a background of changing and improving services for CHD in response to national policy as expressed in the NSF. The authors also indicate because of funding and time constraints, the choice of control PCT was dictated by the local pace of change in primary care reorganisation. This resulted in less than ideal matching of control and intervention practices in terms of deprivation.</p>

		<p>provision of exercise resources suitable for CHD patients. The project was conceived before the NSF publication and operated over the first years of its introduction.</p> <p>Control: 11 GP practices from a second PCT in the same city were recruited as controls.</p>	<p>practice population contained few ethnic minorities. Control and intervention practices were matched as far as possible on deprivation indices, although these characteristics have not been reported.</p>				
Manson-siddle 1999	<p>Case study using retrospective data analysis.</p> <p>(+)</p>	<p>Provision of extra resources for tertiary cardiology services in Grimsby and Scunthorpe Health Authority, aimed to increase coronary angiography and revascularisation rates. Increased resources included</p> <ul style="list-style-type: none"> The appointment of a general physician with an interest in cardiology in 1994 so there was one cardiologist in each of the two district general hospitals (Scunthorpe & Grimsby). 	<p>Patients aged 25 or over with a primary diagnosis of ischaemic heart disease who underwent coronary angiography, CABG or PTCA as a primary procedure recorded in the regional hospital activity data. Patients were from a range of Super Profile Lifestyle Groups.</p>	<p>Do additional resources for tertiary cardiology services, aimed at increasing coronary angiography and revascularisation rates, improve socioeconomic equity of utilisation?</p>	<p>In 1992/4 before concerted intervention, both investigation and revascularisation rates, although increasing, were low in Grimsby and Scunthorpe district compared with most other districts in the Yorkshire region. Also there was a decreasing trend across Super Profile Lifestyle groups from the Affluent Achievers to the Have-Nots despite a two-fold increase in standard mortality ratios indicating the greater need of the more deprived.</p> <p>After concerted effort to increase resources for tertiary cardiology in Grimsby and Scunthorpe district, coronary investigations and revascularisation rates increased by 41% and 47%, respectively.</p> <p>Early indications reveal the trend for angiographies across socioeconomic</p>	<p>UK-based study likely to be applicable.</p>	<p>There may have been a number of unmeasured factors or interventions that could have contributed to these results.</p> <p>The authors rightly state that it is not possible to prove that the interventions examined are solely responsible for the increased equity shown.</p>

		<ul style="list-style-type: none"> • Arrangements for both physicians to undertake angiography on district residents in neighbouring East Rising district. • Extra untargeted expenditure on cardiac procedures starting in 1995 (an additional £1/2 million, a 40% increase on the 1993 expenditure. <p>The degree of equity before the provision of extra resources was determined using data for April 1992 to March 1994, and the corresponding picture for April 1994 to March 1996.</p>			<p>groups also became more equitable.</p> <p>The ratio of angiography rates in the most affluent group (Affluent Achievers) to that in the most deprived group (Have-Nots) decreased by 48% to 0.62:1. The most deprived now received 61% more investigations than the most affluent (rate difference of +826 angiographies/million).</p> <p>The ratio of revascularisation rates in the Affluent Achievers to that in the Have-Nots also decreased, this time by 54% to 0.71:1, with the most deprived now receiving 41% more (265/million more) procedures than the most affluent. However, the considerable variation in rates across the Lifestyle groups resulted in little improvement in the linear trend for revascularisations.</p> <p>The ratio of revascularisation rate to standardised mortality ratios (SMR) by deprivation was, however, also closer to the most affluent group in the latter period than in the former ($p < 0.001$, mean difference 1992/4 = -6.56, mean difference 1994/6 = 0.92), indicating improved socioeconomic equity.</p> <p>The authors conclude early indications are 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>		
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Q3. Barriers / enablers to accessing services for people at risk or with CHD

Author	Study Design & Quality (++)/+/(-)	Study Population	Research Question	Results	Applicability	Confounders / Comments
East 2004	Qualitative study Semi-structured interviews (-)	34 patients with acute MI attending a nurse-led community cardiac rehabilitation service (4H project), serving Southeast Nottingham. Many people within this area live in impoverished inner city neighbourhoods. 14 male, 20 female participants. Mean age 69 years.	What do post-myocardial infarction patients think of an inner-city community heart nurse (CHN) led cardiac rehabilitation service, one year after? The service aims to increase patients' perceived well-being, increase uptake of appropriate treatment and support sustained lifestyle change. Care pathways include home visits, encouragement to attend rehabilitation classes and phone contact. 34 of the 49 people from the CHN's caseload were interviewed. Results relating to access are presented here.	Patients' views on the 'usual' services provided post-discharge were mixed. Some felt they were quickly dropped by the hospital whereas others felt well supported through attending the cardiac rehabilitation classes at the hospital and some felt very satisfied with the service they received from their GPs. These patients were most likely to see little rationale for the CHN role, although they found the CHN's visits congenial. Other patients however felt the CHN was a lifeline and would not have liked to miss the service. In particular, patients valued the accessibility of the CHN service and the individually tailored advice. The fact that the CHN visited people in their homes had the advantage that transport was not a problem; something many people felt was a barrier to attending the hospital-based classes. That CHN delivered care on a one-to-one basis was significant for a large number of service users who were reluctant to mix with other people in a group – a common reason for electing not to attend the hospital-based cardiac rehabilitation programme.	Small UK study likely to be applicable to similar populations.	It is unclear how rigorously this study was conducted as the methods for data collection and analysis have been poorly reported. The authors appropriately state it is impossible to draw any firm conclusions from the study as the intervention involved only one CHN and no comparisons can be made. Individual participant characteristics are not provided with regards to their socioeconomic status.

				<p>For other users, the flexibility of the CHN service was important – for example, for one single parent the hospital-based classes clashed with the imperative to collect children from school.</p> <p>18/34 patients mentioned that CHN role as being particularly helpful for continuity of care / easy access to care.</p>		
Higginbottom 2006	<p>Qualitative</p> <p>Two focus groups, 21 semi-structured interviews and five vignette-based interviews.</p> <p>(+)</p>	<p>36 African-Caribbean hypertensive patients from general practices in Sheffield & Nottingham. Age 37-82 (median 59.5). Circa 50% male.</p>	<p>What are participants' access, utilisation and perceptions of primary health care services in two cities in England? What factors militate against or enhance utilisation of services for African Caribbean people residing in England?</p>	<p>Findings of participants views on primary health care services focused on four themes:</p> <ul style="list-style-type: none"> • Running to the doctor – cultural norm is resourcefulness and self-care • Satisfaction/dissatisfaction with primary health care services – largely satisfied with GP care, particularly when time given by GP • Non-concordance – and concerns with prescribed medication • Motivations for use of private GPs – a tradition amongst those who can afford it and some belief in superiority of care. <p>Authors concluded that a greater understanding is needed amongst GPs for motivations and views of this group of patients.</p>	<p>UK study likely to be applicable to similar populations.</p>	<p>Only one researcher. Role in relation to participants not clear. Some doubts about richness of data.</p>

<p>Lindesay 1997</p>	<p>Qualitative Interviews using survey questionnaire (+)</p>	<p>149 Asian Gujaratis and 152 whites aged 65 years. Participants were identified from the Leicestershire District Family Health Authority list.</p> <p>Whites: 72-81 years old and 60% female. 42% of the group was married. Approx 50% living with others.</p> <p>Gujaratis: 69-76 years and 57% female. 56% of the Gujarati group was married. > 80% living with others. 65% did not speak English and 78.5% did not read or write it.</p> <p>786 were invited to participate; participation response rates were 72% for Asian group and 80% for the white group.</p>	<p>What are the factors affecting the uptake of health and social services by elderly Asian Gujarati?</p> <p>Note: this was a study of general access to services. It was not CHD specific though levels of CHD-related conditions were high in both groups.</p>	<p>Knowledge and understanding of services were poorer in the Gujarati group, e.g. 64% Gujaratis and 18% whites were not aware of the district nurse service.</p> <p>Fewer Asian Gujaratis knew how to apply for services (possibly relying more on those they lived with for support) and of those applying, fewer had been successful.</p> <p>Where services had been obtained, the levels of dissatisfaction were higher for the Gujarati group. For example 33% Gujaratis and 74% whites found the district nurse service to be very helpful and 33% vs 90% very respectful.</p> <p>The authors conclude that the lower uptake of services by elderly Asian Gujarati is not the result of better health but may be explained by greater family support together with a lack of knowledge of and dissatisfaction with what is available. Health services will need to reappraise and revise some of their practices if they are to cater adequately to this growing population with many needs as yet unmet.</p>	<p>Applicable to UK settings and to Asian communities, however sample, was not CHD specific.</p>	<p>Cross sectional interview only (essentially quantitative analysis) and no contextual variation/triangulation. No ethical issues considered.</p>
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Macintosh 2003	Qualitative study (+)	18 GPs and practice nurses (PNs) from practices in both intervention (n=11) and control (n=11) groups in areas of deprivation in a city in the North of England.	<p>What are the perceptions of GPs and practice-based nurses of the benefits of a 2-year, GP-based intervention that provided additional resources in the form of one part-time specialist nurse and a part-time exercise worker to promote secondary prevention of CHD for patients with established disease, in an area of significant deprivation?</p> <p>Note: this is qualitative data from the evaluation from Lacey 2004 above. It provides health professionals' opinions on the barriers to providing cardiac services in general practice.</p>	<p>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. Whilst a need for an expansion of services was widely accepted, it was also clear that this was thought to be problematic without a significant increase in resources.</p> <p>The resource most commonly cited as key to expansion was PN hours. Practice nurses were ready to take the lead in many areas of CHD service development and this was largely supported by GPs.</p> <p>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 PNs to feel they were supported by the GPs and concern that the perceived shortage of PN hours may create problems of conflicting priorities.</p>	UK-based study likely to be applicable for similar areas.	Sampling strategy and methodology not fully reported.
Naqvi 2003	Qualitative (-)	Primary health care staff from 10 GP practices located in Bristol North and Bristol South and West Primary Care Trusts	<p>What are the experiences of health care staff in consulting with and managing South Asian patients with CVD conditions within the primary health care setting?</p> <p>Twelve focus groups were conducted asking members to discuss their perceptions of</p>	<p>Access to primary health care services for South Asian patients with or at cardiovascular disease (CVD) conditions was seen as an important issue by all health professionals interviewed.</p> <p>Four themes and sub-themes emerged in the specific barriers for patients in accessing services and having their needs and concerns met:</p> <ul style="list-style-type: none"> Poor communication, including language and symptoms 	UK study based in area with high population of Asian people.	<p>Insufficient methodological information is provided, making it difficult to determine the quality of the study.</p> <p>Further information is needed on the sampling, recruitment, number of participants, how data was collected and analysed.</p> <p>Research of health professionals only and no corroborative research with patients.</p>

			<p>factors that influence South Asian patients' access to health care for CVD conditions, views of South Asian patients' perceptions towards their condition and toward its management. The majority of groups included GPs, practice (and CHD) nurses and the practice managers.</p>	<p>presentation</p> <ul style="list-style-type: none"> • Patient's lack of awareness, including low levels of education and misunderstanding of Western medicine • Cultural and religious customs, including female inhibitions and religious practices • System limitations including time constraints of consultation, lack of patient medical history, lack of translated resources. <p>The focus group interviews highlighted the need to implement changes at both primary care and community level, with the aim of improving equity of access to primary care services for South Asian patients and of reducing the increased prevalence rates of CVD conditions among these populations</p>		
Netto 2007	<p>Qualitative study</p> <p>Focus group discussions in Autumn 2002 and six months later in Spring 2003.</p> <p>(++)</p>	<p>91 South Asians in the Leith area Edinburgh, using the 'Khush Dil' Clinic: a project set up in Spring 2002 which translated means 'happy heart'.</p> <p>Two rounds of focus group sessions were held with six different single-sex groups to evaluate the project</p>	<p>How can service users' views and perspectives be used to enhance the effectiveness of targeted CHD prevention initiatives for UK South Asians?</p> <p>The Khush Dil service aimed to increase accessibility to CHD prevention services for people from South Asian communities and more effectively meet the needs of people from these communities. The</p>	<p>Those who had attended clinics with the project nurse, where they were able to obtain one-to-one advice, information and a check-up, particularly appreciated the input provided.</p> <p>In the second round of focus group discussions, participants observed that the information, advice and encouragement of the project were crucial in sustaining the motivation to adopt healthier lifestyles.</p> <p>The positive aspects of the service identified were:</p> <ul style="list-style-type: none"> • the flexibility that staff had demonstrated in rescheduling activities at short notice 	<p>UK-based population likely to be applicable to similar populations.</p>	<p>Postal orders of £15 were given to all participants and taxis were arranged and paid for, for those who needed transport to attend focus groups. 36/55 (65%) attended follow up focus group.</p>

		longitudinally. Groups were Bangladeshi men and women, Indian men and women, and Pakistani men and women. 55 people over 16 years attended the first round, and 36 in the second. The majority had migrated to the UK and identified languages other than English as their preferred spoken and written language. Participants had varying levels of formal education ranging from none at all to tertiary level qualifications.	service consisted of a nurse-led community CHD risk clinic, nutrition workshops and work with local community and voluntary organisations to establish healthy lifestyles initiatives.	<ul style="list-style-type: none"> the use of interpreters where necessary sensitivity in planning activities around religious events 		
Richards 2003	Qualitative Semi-structured interviews (+)	60 patients aged 45-64 who had experienced chest pain, identified from epidemiological surveys carried out in two socio-economically contrasting areas of Glasgow. 30 respondents from	To what extent is self-responsibility, blame for ill-health and risk behaviours a feature in accounts of respondents with chest pain? Does perceived victim-blaming influence lay interpretations and responses to chest pain, and to ill health in	Individuals blamed themselves for their heart disease and general ill health and many also believed that they would be blamed for their behaviour and health problems by doctors. For some respondents, self blame and fear of blame appeared to contribute to a reluctance to seek care. Self blame, experience of blame and fear of blame were more common in respondents from the deprived area. The	UK study may be likely to be applicable to similar populations.	Uncertain if respondents had similar severity of chest pain. Lower response from deprived area may have introduced bias and reduced generalisability. The major concern is the likely context bias introduced by being interviewed by a GP.

		<p>a deprived area and 30 from an affluent area.</p> <p>Affluent area = 80% in Carstairs 1,2; Deprived area = 77% in Carstairs 5-7.</p> <p>In both areas, 50% male participants.</p>	general?	<p>authors concluded that if health promotion is going to remain part of the primary care consultation it should be carried out in a caring and sensitive manner that avoids stigmatising and blaming patients.</p>		
Tod 2002	<p>Qualitative study</p> <p>Semi-structured interviews and framework analysis.</p> <p>(+)</p>	<p>Semi-structured interviews with 15 staff (wide range of professions) and 20 post MI patients. One group interview with seven health visitors and one group interview with two lay members of heart support groups.</p> <p>Patient's ages ranged from 43 to 76 years old, 16 (80%) were male. Employment history varied: 12 participants were retired, three were on sick leave, two were unemployed and three had returned to work.</p>	<p>What barriers exist for patients in accessing cardiac rehabilitation services within the South Yorkshire Coalfield locality?</p>	<p>Problems in accessing cardiac rehabilitation services could be categorised into five themes:</p> <ul style="list-style-type: none"> • Absence of cardiac rehabilitation services • Long waiting lists and inappropriate exclusion criteria • Communication system failings and low standard of the information given • Lack of understanding of cardiac rehab amongst patients (eg It's exercise and not good after MI) and 'macho' tendency to minimise severity of illness, and staff reference to phases rather than pathway; • Lack of appropriateness of available services to patient needs; eg failure to fit in with other commitments (for women), lack of transport, disruption of routine (for older people). <p>Finding alternatives, such as seeking advice from elsewhere or paying for private rehabilitation, and flexibility over</p>	<p>UK study in an area of deprivation likely to be applicable to similar populations.</p>	<p>Selection process unclear. Contexts (and potential for bias) not clear. Some doubts over analysis. Small study. Unclear whether groups were representative of population. Group interviewees were a completely separate population from those interviewed individually.</p>

		The nature of employment ranged from professional to various skilled and unskilled occupations. There was a range of home location in terms of area of deprivation.		control of time to access hospital appointments were facilitating options for the better off. Thus, professional and more affluent groups more likely to negotiate a way round the system.		
Tod 2001	Qualitative Individual and group semi-structured interviews (++)	Patients and staff from an urban practice in Rotherham and a former mining village in the Barnsley area. Individual interviews were held with 14 patients with stable angina and 9 primary care staff (7 GPs, one health visitor, one community pharmacist) plus group interviews with 8 GPs and 5 community groups. Patients were aged 52-73. Barnsley and Rotherham	What factors within the South Yorkshire coalfields influence use of health services by people with angina?	Delay, denial and self-management by patients meant that the full extent of symptoms often remained hidden from GPs, resulting in a delayed or missed referral. Barriers identified fell into six categories: <ul style="list-style-type: none"> • Structural - transport, inconvenient surgery times, cardiology waiting lists • Personal - fear, denial and self management • Social and cultural – cope and don't fuss • Past experience and expectations – previous access problems and negative attitudes of health professionals or bad experiences • Diagnostic confusion – attribution to lung problems common in this community • Knowledge and awareness – low perception of risk of heart disease. Authors concluded that community development could tackle inequalities -	UK study in an area of deprivation likely to be applicable to similar populations.	Relationship with primary researcher and contexts not well preserved. Some minor concerns over analysis. Otherwise a good study.

		<p>health authorities are two of three areas in the South Yorkshire Coalfields Health Action Zone. People in these areas experience great socioeconomic disadvantage and health inequalities. Most of the population is white, British and working class.</p>		<p>many of the influencing factors operate before GPs get involved. Structural changes were needed to improve access to and acceptability of services. Primary care staff should be educated to detect underreporting of symptoms and promote appropriate referral.</p>		
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<p>Vishram 2007</p>	<p>Qualitative</p> <p>Semi-structured interviews & group discussion</p> <p>(+)</p>	<p>Staff and clients from a community-based, culturally sensitive cardiac rehabilitation service in an inner city area of Newcastle-upon-Tyne.</p> <p>Interviews with 4 community health development workers on two occasions (after being in post for 6 months and then 6 months later). 9 members of one of the project's initiatives (a women's dance group) participated in a group discussion.</p> <p>Participants were of Pakistani and Bangladeshi origin.</p>	<p>What are the experiences and perceptions of cardiac rehabilitation among a sample of women from South Asian communities. What are the potential barriers and facilitators to participation?</p>	<p>A number of barriers to taking part in cardiac rehabilitation were identified during interviews with project staff:</p> <ul style="list-style-type: none"> • Individual motivation, knowledge and education related to anatomy, beliefs about exercise and prior experience of leisure environments were noted • Cultural barriers were identified, specifically family commitments and influence, language, 'inappropriate' topics and traditional clothing • Practical barriers identified were related to timing of the sessions conflicting with the call to prayer, location, safety and transport. <p>Facilitators included were:</p> <ul style="list-style-type: none"> • single sex sessions • selection of a familiar/favourable venue • social aspects • perceived health benefits • appropriate activity • family can attend • motivational leader and qualified staff. 	<p>UK study likely to be applicable to similar population.</p>	<p>Small sample size and only 9 patients interviewed from just one component of the cardiac rehabilitation programme.</p>
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