Health Inequalities in Primary Care: Effect of Spearhead Primary Care Trusts 2002-2009

Report to the National Audit Office

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1 Executive summary

This is an analysis of key indicators from primary care based on the QResearch database between 2002 and 2009 for the National Audit Office as part of its review on Health Inequalities. Comparisons are made between general practices in spearhead areas compared with those in non spearhead practices to examine trends over time as well as compare levels of achievement of the indicators in deprived and affluent population.

Key findings

The key findings among patients in the spearhead areas are:

- **Smoking**: In 2002, 37% of patients in the most deprived group smoked compared with 16% in the most affluent group. The ratio of this difference was 2.32 indicating that smoking 132% higher in deprived compared with affluent groups at baseline. By 2009, smoking rates had fallen in both affluent and deprived groups but the ratio was 2.69 indicating smoking rates were 169% higher in deprived compared with affluent groups. This suggests that the gap has not narrowed. A similar pattern was found in the non spearhead areas.
- **Obesity**: In contrast, levels of obesity rose over the 7 years in both affluent and deprived groups in the spearheads. In 2002, it affected 17% of affluent and 22% of deprived patients compared with 24% and 29% in 2009. Levels of obesity were 33% higher among deprived patients compared with affluent patients in 2002 and 22% higher in 2009 showing a small improvement in the gap. A similar pattern was found in the non spearhead areas.
- **Type 2 diabetes**. After smoking, the most marked difference between affluent and deprived patients was prevalence of diabetes which was 101% higher in deprived verses affluent in 2002 compared with 77% higher in deprived verses affluent by 2009. A similar pattern was found in the non spearhead areas.
- **Uncontrolled blood pressure not on medication**: Although there was a rise in the percentage of patients with this indicator between 2002 and 2009, the levels were similar among deprived and affluent patients at both time points i.e. there was no significant health equality gap for this indicator.
- **Patients at high risk of cardiovascular disease (CVD)**: in 2002, 14% of patients from deprived areas were at high risk of CVD compared with 10% in affluent areas. By 2009, the corresponding figures were 12% and 9%. The ratio between deprived and affluent was 44% in 2002 and 22% in 2009 showing some improvement in the health inequality gap over time. A similar pattern was found in the non spearhead areas.
- **Statin usage in patients with established cardiovascular disease**: There was an improvement in the percentage of patients with cardiovascular disease not on statins over the study period in both groups. At baseline, 40% of affluent patients and 48% of deprived patients with CVD were not prescribed statins. By 2009, the corresponding figures were 21% and 19%.

A similar trend was found for each of these indicators in patients from non-spearhead areas over time. The extent of the differences between deprived and affluent patients for each indicator were similar to those found in the spearhead areas in 2002 and also in 2009.

Discussion of findings

This is a descriptive study which estimates achievement in simple measures over a 7 year period. It is part of a larger investigation by the National Audit Office which examines other aspects of health inequalities and policy so this report needs to be understood within that context.

The present report, by its very nature, is unable to capture information on the specific policies either within the practice or the associated primary care trust (PCT). There have also been national policy changes and initiatives which have spanned this study period such as the introduction of 'pay for performance' for GPs as part of the new GMS contract Quality and Outcomes Framework (QOF). Inevitably, this will have affected both the recording of information on the computer as well as screening and prescribing activity. It is therefore difficult to attribute change, or lack of change, in the indicators presented in this study to the implementation of the policy of spearhead PCTs.

What is apparent is that there are persisting health inequalities despite the Quality and Outcomes Framework and despite the introduction of spearheads. There are areas of affluence within the spearheads and also areas of deprivation within the non spearheads. Hence the categorisation of spearheads is likely to miss some patients from deprived areas. Use of a postcode linked deprivation score (such as the Townsend score which is present in GP computer systems) offers an alternative and practical mechanism for identifying patients in deprived areas for targeting of interventions and monitoring their success. Such an approach is already in use as part of the Department of Health's Vascular Screening Programme. It could be extended to other conditions and may help minimise heath inequalities over time especially if health inequality indicators could be developed, tested and then incorporated into the Quality and Outcomes Framework.

2 Purpose of document

This is a report to the National Audit Office for an analysis to support the review of Health Inequalities currently being undertaken.

3 Aim

The aim of the analysis is to estimate the effect of spearhead primary care trusts (PCTs) on differences in health inequalities by examining changes in key indicators between 2002 and 2009.

4 Objectives

Our objectives were to compare trends in health inequalities for 4 key domains by ethnicity and deprivation between 2002 and 2009, comparing a sample of practices contributing to the QResearch database in spearhead areas with a sample from non Spearhead areas. 2002 was chosen as it is the year prior to the start of the Spearhead policy.

The four domains were chosen by the NAO as they relate to interventions which the Department of Health consider to be significant.

5 Outcome Measures

The analysis focuses on the following outcome measures, measured at yearly intervals - 2002 and 2009 comparing achievement in practices in Spearhead and non Spearhead areas.

1. Rates of smoking and obesity (defined as a body mass index >=30 kg/m^2).
2. User of statins and aspirin in patients at high risk of cardiovascular disease.
3. Use of antihypertensives in patients with uncontrolled hypertension (i.e. systolic blood pressure > 150/90 mm Hg). Antihypertensives included current prescription with ACE inhibitors, beta blockers, calcium channel blockers or thiazide diuretics.
4. Use of statins and aspirin in patients with established cardiovascular disease for secondary prevention.

6 Study population

We identified a sample of practices in spearhead and non spearhead areas from version 26 of QResearch database. The QResearch database is a validated, representative anonymised research database containing patient level data from more than 12 million patients registered with 604 general practices from across the UK over the last 20 years. The practices in the QResearch database are mapped to the 32 strategic health authorities in operation prior to the changes in 2006 rather than to individual PCTs. Of the 604 practices, we identified 217 practices from areas where there were no spearhead PCTs and 115 from spearhead PCTs. We excluded 226 practices which were in mixed areas or where we could not be sure. We also excluded 30 practices from the devolved administrations. For our analysis, we identified patients age 35 to 74 registered on the 01 January of each year from 2002 to 2009. Table 1 shows the geographical distribution of patients aged 35-74 years in the spearhead practices for 2002 and Table 2 for the non-spearheads strategic health authority (pre 2006 boundaries).

Table 1: Number of patients 35-74 years in practices from spearhead areas

Name of SHA	patients	% of total sample
North East London	55,794	14.5
Northumberland, Tyne & Wear	83,737	21.8
County Durham & Tees Valley	40,902	10.6
Cumbria & Lancashire	70,795	18.4
Greater Manchester	38,502	10.0
South Yorkshire	26,299	6.8
Birmingham & The Black Country	68,156	17.7
total	**384,185**	**100.0**

Table 2: Number of patients 35-74 years in practices from non spearhead areas

Name of SHA	patients	% of total sample
Norfolk, Suffolk & Cambridgeshire	88,464	10.8
Bedford & Hertfordshire	55,722	6.8
Essex	19,867	2.4
North West London	45,728	5.6
South West London	25,982	3.2
Thames Valley	114,700	14.0
Hampshire & Isle Of Wight	62,932	7.7
Kent & Medway	30,588	3.7
Surrey & Sussex	122,467	15.0
Avon, Gloucestershire & Wiltshire	117,322	14.4
South West Peninsula	48,751	6.0
Somerset & Dorset	84,144	10.3
Total	816,667	100.0

Age distribution of patients in the analysis

The age distribution of points in the spearhead and non spearhead practices were similar as shown in the next table. This implies that any differences between the study population is unlikely to be explained by differences in the age structure of the two populations. The age-sex structure of patients on the QResearch database is also similar to that estimated by the Office of National Statistics which increases the generalisibilty of results from the QResearch database.

Table 3: Age distribution of patients in spearhead compared with non spearhead for 2002

	non spearhead	% of sample	spearhead	% of sample	Total	% of sample
35-39 years	143,231	17.5	68,305	17.8	211,536	17.6
40-44 years	126,863	15.5	61,483	16.0	188,346	15.7
45-49 years	109,968	13.5	51,833	13.5	161,801	13.5
50-54 years	108,904	13.3	49,073	12.8	157,977	13.2
55-59 years	108,766	13.3	47,568	12.4	156,334	13.0
60-64 years	81,627	10.0	38,240	10.0	119,867	10.0
65-69 years	72,145	8.8	35,384	9.2	107,529	9.0
70-74 years	65,163	8.0	32,299	8.4	97,462	8.1

Distribution of patients by Deprivation Quintile

We allocated patients to deprivation quintiles using the Townsend Score which is a measure of material deprivation based on variables from the 2001 census. Quintile 1 represents the most affluent areas and quintile 5 represents the most deprived area. As can be seen from Table 4, 8.0% of patients from the non spearhead practices were in the most deprived quintile compared with 28.9% of those from spearhead areas. Similarly, there was a much lower proportion of patients from affluent areas in the spearhead practices. This suggests that the allocation of practices to spearheads corresponds reasonably well with deprivation as measured by the Townsend score i.e. patients in spearhead areas have higher levels of material deprivation.

Table 4: Distribution of patients by quintile of deprivation in 2002

Townsend quintile	non spearhead	% of sample	spearhead	% of sample	Total	% of sample
Quintile 1 (most affluent)	233,527	28.6	67,347	17.5	300,874	25.1
Quintile 2	195,099	23.9	61,894	16.1	256,993	21.4
Quintile 3	178,064	21.8	65,952	17.2	244,016	20.3
Quintile 4	144,758	17.7	77,831	20.3	222,589	18.5
Quintile 5 (most deprived)	65,219	8.0	111,161	28.9	176,380	14.7

Distribution by ethnicity

We allocated each patient on the database according to self assigned ethnicity using 9 categories which have been used for other analyses using QResearch.

The categories were white, Indian, Bangladeshi, Pakistani, Other Asian, Black Caribbean, Black African, Chinese, Other. If ethnicity was not recorded, patients were included in the white group. The distribution of patient by ethnic group is shown in the next table

Table 5: Distribution of patients by ethnicity in 2002

	spearhead		non spearhead		Total	
	No. patients	**% of sample**	**No. patients**	**% of sample**	**No. patients**	**% of sample**
White/not recorded	368,582	95.9	796,766	97.6	1,165,348	97.0
Indian	2,147	0.56	6,344	0.78	8,491	0.71
Pakistani	2,391	0.62	2,010	0.25	4,401	0.37
Bangladeshi	2,475	0.64	351	0.04	2,826	0.24
Other Asian	681	0.18	1,992	0.24	2,673	0.22
Caribbean	3,067	0.80	3,470	0.42	6,537	0.54
Black African	2,116	0.55	1,521	0.19	3,637	0.30
Chinese	642	0.17	815	0.10	1,457	0.12
Other	2,084	0.54	3,398	0.42	5,482	0.46
Total	384,185	100.0	816,667	100.0	1,200,852	100.0

Trends in prevalence of smoking and obesity

The next table shows the trend in the prevalence of smoking and obesity in spearhead and non spearhead practices. Smoking rates were consistently higher in spearhead practices compared with non spearhead practices in every analysis year. Smoking rates fell in both groups of practices - from 27.4% to 24.1% in spearheads and from 20.9% to 18.5% in non spearheads.

Similarly, levels of obesity were consistently higher among spearhead practices compared with non spearhead practices. Over the 7 years of the study, levels of obesity rose from 20.1% to 27.6% in spearhead practices and from 17.8% to 24.3%.

Table 6: trends in smoking and obesity

year	No. registered patients	No. current smokers	% smoking	No. obese	% obesity
spearhead					
2002	384,185	105,309	27.4	77,377	20.1
2003	390,741	106,310	27.2	82,437	21.1
2004	390,996	104,635	26.8	87,782	22.5
2005	388,123	100,574	25.9	93,501	24.1
2006	392,456	99,771	25.4	98,396	25.1
2007	394,925	98,967	25.1	102,739	26.0
2008	396,244	97,227	24.5	106,842	27.0
2009	390,443	94,243	24.1	107,772	27.6
non spearhead					
2002	816,667	170,746	20.9	145,579	17.8
2003	829,901	172,710	20.8	155,293	18.7
2004	840,833	172,848	20.6	167,493	19.9
2005	839,036	166,154	19.8	177,850	21.2
2006	845,520	163,520	19.3	186,560	22.1
2007	842,005	160,398	19.0	193,469	23.0
2008	843,124	157,689	18.7	199,250	23.6
2009	823,155	152,050	18.5	199,892	24.3

Trends in patients at high risk CVD

The next table shows the percentage of patients at high risk of CVD in each year. For this study, high risk was defined a 10 year cardiovascular risk score of 20% using the QRISK2 score (www.qrisk.org). Whilst the percentage of patients at high risk tended to be higher in spearheads compared to non spearheads, the levels tended to fall in both groups over the 7 year study period. There were large changes in the proportion of high risk patients not prescribed aspirin in both groups of practices. This fall from 89.8% to 57.6% in spearheads compared with 90.5% to 64.8% in non spearheads. It is of interest that a higher percentage of patients in spearhead practices were prescribed statins compared with non spearhead practices. It should also be noted that not all patients at high risk of cardiovascular disease require statins since other interventions such as weight loss, blood pressure control, smoking cessation might be more suitable.

A similar pattern was found for aspirin though it should be noted that there is no clear consensus regarding the appropriate use of aspirin among patients at high risk of cardiovascular disease.

Table 7: Trends in patients at high risk of cardiovascular disease

year	Total registered patients	High risk patients i.e. QRISK2>20%	% at high risk	High risk patients not on statins	% high risk not on statins	high risk patients not on aspirin	% of high risk not on aspirin
Spearhead							
2002	384,185	46,963	12.2	42,184	89.8	40,856	87.0
2003	390,741	46,160	11.8	39,527	85.6	39,133	84.8
2004	390,996	45,684	11.7	36,532	80.0	37,522	82.1
2005	388,123	43,897	11.3	32,046	73.0	34,556	78.7
2006	392,456	43,208	11.0	29,391	68.0	33,094	76.6
2007	394,925	42,906	10.9	26,756	62.4	32,014	74.6
2008	396,244	43,395	11.0	25,497	58.8	31,935	73.6
2009	390,443	43,461	11.1	25,049	57.6	32,237	74.2
Non spearhead							
2002	816,667	86,847	10.6	78,580	90.5	76,630	88.2
2003	829,901	85,880	10.3	74,124	86.3	73,579	85.7
2004	840,833	85,569	10.2	69,822	81.6	71,278	83.3
2005	839,036	82,452	9.8	62,227	75.5	66,471	80.6
2006	845,520	81,217	9.6	57,986	71.4	64,575	79.5
2007	842,005	80,356	9.5	53,773	66.9	63,058	78.5
2008	843,124	81,766	9.7	53,002	64.8	63,744	78.0
2009	823,155	81,352	9.9	52,251	64.2	63,957	78.6

Trends in uncontrolled hypertension

The next table shows the numbers of patients diagnose hypertension whose last blood pressure was above 150/90 mmHg as a percentage of the total registered population. Overall, the percentage of the total population with uncontrolled hypertension was similar in both groups of practices and fell slightly over the 7 year study period.

The table also shows the percentage of patients with uncontrolled hypertension who are not prescribed antihypertensive medication. In the spearhead practices, 15.3% of patients with uncontrolled hypertension were not prescribed antihypertensive medication in 2002. This rose to 22.3% by 2009. For non spearhead practices, there was a similar trend with 17% of patients with uncontrolled hypertension not prescribed medication in 2003 rising to 25% by 2009.

Table 8: Trends in use of medication in patients with uncontrolled hypertension

year	Total registered patients	patients with diagnosed hypertension where BP uncontrolled	% total population with uncontrolled hypertension	patients with uncontrolled hypertension not on BP treatment	% uncontrolled hypertension not on BP treatment
Spearhead practices					
2002	384,185	16,828	4.4	2,578	15.3
2003	390,741	17,472	4.5	2,623	15.0
2004	390,996	17,408	4.5	2,495	14.3
2005	388,123	15,446	4.0	2,315	15.0
2006	392,456	13,856	3.5	2,153	15.5
2007	394,925	12,497	3.2	2,111	16.9
2008	396,244	11,890	3.0	2,193	18.4
2009	390,443	11,116	2.8	2,476	22.3
Non spearhead					
2002	816,667	33,622	4.1	5,706	17.0
2003	829,901	34,548	4.2	5,839	16.9
2004	840,833	32,076	3.8	5,732	17.9
2005	839,036	27,943	3.3	5,194	18.6
2006	845,520	24,720	2.9	4,905	19.8
2007	842,005	22,906	2.7	4,688	20.5
2008	843,124	21,638	2.6	4,809	22.2
2009	823,155	20,873	2.5	5,213	25.0

Trends in prevalence of cardiovascular disease and diabetes

The next table shows how the prevalence of cardiovascular disease and diabetes over the last 7 years spearhead and non spearhead practices. The prevalence of CVD was consistently higher in spearhead practices than non spearhead practices. The levels remained reasonably constant over the seven year study period. It is worth noting that prevalence of cardiovascular disease is dependent on both the incidence of cardiovascular (ie rate of diagnosis of new cases) and the mortality of patients after diagnosis.

For type 2 diabetes, there was a marked increase in prevalence from 3.8% to 6.2% in spearheads compared with 3.0 to 4.8% in non spearhead practices. The increase in the prevalence of diabetes mirrors a well documented worldwide increase in type 2 diabetes which has been occurring over the last 10-15 years. The increased prevalence reported here is likely to be affected by increasing levels of obesity, improvements in computer recording, changes in diagnostic thresholds, improved screening and ascertainment.

Table 9: Trends in prevalence of cardiovascular disease and diabetes

year	No. registered patients	No. with CVD	% with CVD	No. with Type 2 diabetes	% with Type 2 Diabetes
spearhead					
2002	384,185	24,474	6.4	14,741	3.8
2003	390,741	24,961	6.4	16,113	4.1
2004	390,996	25,019	6.4	17,595	4.5
2005	388,123	26,829	6.9	19,985	5.1
2006	392,456	26,944	6.9	21,328	5.4
2007	394,925	26,887	6.8	22,402	5.7
2008	396,244	26,569	6.7	23,515	5.9
2009	390,443	26,010	6.7	24,256	6.2
non spearhead					
2002	816,667	34,759	4.3	24,366	3.0
2003	829,901	35,926	4.3	26,968	3.2
2004	840,833	36,751	4.4	29,477	3.5
2005	839,036	39,593	4.7	33,362	4.0
2006	845,520	39,589	4.7	35,393	4.2
2007	842,005	39,036	4.6	36,687	4.4
2008	843,124	38,680	4.6	38,663	4.6
2009	823,155	37,712	4.6	39,509	4.8

Trends in use of statins and aspirin in CVD

The next table shows trends in the use of statins and aspirin among patients with established cardiovascular disease. In the spearhead practices, 44% of patients with CVD were not prescribed statins compared with 43.9% in the non spearhead practices. The percentage decreased over the 7 years such that by 2009, 19.8% of CVD patients in spearhead practices were not prescribed statins compared with 21.9% of those in non spearhead areas. It is worth noting that some patients may have been offered statins but have declined statins. Alternatively some patients may have contraindications to their use. Also it is worth noting that the study period included the start of the GP Quality and Outcomes framework in 2004 and this is likely to have affected prescribing for patients with established cardiovascular disease and partly account for the increased use of statins for example.

The percentage of CVD patients not prescribed aspirin was similar between the two groups of practices and showed similar levels in 2002 and 2009. It is however worth noting that this indicator is based on a record of a prescription of aspirin being issued and that some patients buy aspirin over the counter or have contra-indications which mean they can't take it.

Table 10: Trends in use of statins and aspirin in patients with established CVD

year	patients with established CVD	Patients with CVD not prescribed statins	% with CVD not prescribed statins	patients with CVD not prescribed aspirin	% patients with CVD not prescribed aspirin
Spearhead					
2002	24,474	10,804	44.1	7,887	32.2
2003	24,961	8,868	35.5	7,648	30.6
2004	25,019	6,797	27.2	7,341	29.3
2005	26,829	5,765	21.5	7,702	28.7
2006	26,944	5,078	18.8	7,679	28.5
2007	26,887	4,593	17.1	7,709	28.7
2008	26,569	4,501	16.9	7,835	29.5
2009	26,010	5,148	19.8	8,449	32.5
Non spearhead					
2002	34,759	15,244	43.9	12,337	35.5
2003	35,926	12,685	35.3	12,217	34.0
2004	36,751	10,686	29.1	12,138	33.0
2005	39,593	9,505	24.0	12,723	32.1
2006	39,589	8,610	21.7	12,789	32.3
2007	39,036	7,884	20.2	12,677	32.5
2008	38,680	7,764	20.1	12,743	32.9
2009	37,712	8,242	21.9	13,388	35.5

Health inequalities by deprivation: spearheads

The next table compares each indicator for patients in the spearhead practices in 2002 and 2009, comparing those in the most deprived quintile the that for patients in the most affluent quintile.

Smoking: In 2002, 37.4% of patients in the most deprived group smoked compared with 16.1% in the most affluent group. The ratio of this difference was 2.32 indicating that smoking 132% higher in deprived compared with affluent groups at baseline. By 2009, smoking had fallen in both affluent and deprived groups but the ratio was 2.69 indicating smoking rates were 169% higher in deprived compared with affluent groups. This suggests that the gap has not narrowed and may well have widened.

Obesity: In contrast, levels of obesity rose over the 7 years in both affluent and deprived groups. In 2002, it affected 16.7% of affluent and 22.3% of deprived patients compared with 24.2 and 28.9% in 2009. Levels of obesity were 33% higher among deprived patients compared with affluent patients in 2002 and 22% higher in 2009 showing a small improvement in the gap

Uncontrolled blood pressure not on medication: although there was a rise in the percentage of patients with this indicator between 2002 and 2009, the levels were similar among deprived and affluent patients at both time points.

Patients at high risk of CVD: in2002, 14.4% of patients from deprived areas were at high risk of CVD compared with 10% in affluent areas. By 2009, the corresponding figures were 12.2 and 9.1. The ratio between deprived and affluent was 44% in 2002 and 22% in 2009.

Statin usage in patients with established CVD: There was an improvement in the percentage of patients with cardiovascular disease not on statins over the study period in both group. At baseline, 39.9% of affluent patients and 47.7% of deprived patients with CVD were not prescribed statins. By 2009, the corresponding figures were 20.6% and 18.8%.

Type 2 diabetes: After smoking, the most marked difference between affluent and deprived patients was prevalence of diabetes which was 101% higher in deprived verses affluent in 2002 compared with 77% higher in deprived verses affluent by 2009.

Table 11: % achievement of indicators in deprived verses affluent patients in spearhead practices

	Quintile 1 affluent	Quintile 5 deprived	ratio of deprived to affluent	Quintile 1 affluent	Quintile 5 deprived	ratio of deprived to affluent
	2002	2002	2002	2009	2009	2009
% of smokers	16.1	37.4	2.32	12.8	34.5	2.69
% obese	16.7	22.3	1.33	24.2	28.9	1.20
% with type 2 diabetes	2.6	5.2	2.01	4.5	8.0	1.77
Uncontrolled BP not on medication	15.9	16.3	1.02	23.0	22.6	0.98
% High risk of CVD	10.0	14.4	1.44	9.9	12.1	1.22
% High risk CVD not on statins	90.7	89.0	0.98	61.6	55.2	0.90
% High risk CVD not on aspirin	87.0	86.2	0.99	75.3	74.0	0.98
% with CVD not on statins	39.9	47.7	1.19	18.8	20.6	1.09
% with CVD not on aspirin	33.5	30.5	0.91	33.2	31.2	0.94
% with established CVD	5.1	7.1	1.39	5.7	7.2	1.27

Similar results were obtained when adjustments were made for age and presence of diabetes.

Health inequalities by deprivation: non spearheads

The next table shows each indicator for patients in the non- spearhead practices in 2002 and 2009, comparing those in the most deprived quintile with that for patients in the most affluent quintile.

Smoking: In 2002, 33.3% of patients in the most deprived group smoked compared with 14.7% in the most affluent group. The ratio of this difference was 2.27 indicating that smoking 127% higher in deprived compared with affluent groups at baseline. By 2009, smoking had fallen in both affluent and deprived groups but the ratio was 2.50 indicating smoking rates were 150% higher in deprived compared with affluent groups. This suggests that the gap has not narrowed over time.

Obesity: In contrast, levels of obesity rose over the 7 years in both affluent and deprived groups. In 2002, it affected 16.0% of affluent and 19.5% of deprived patients compared with 22.4 and 24.8% in 2009. Levels of obesity were 22% higher among deprived patients compared with affluent patients in 2002 and 11% higher in 2009 showing a small improvement.

Uncontrolled blood pressure not on medication: although there was a rise in the percentage of patients with this indicator between 2002 and 2009, the levels were similar among deprived and affluent patients at both time points.

Patients at high risk of CVD: in2002, 12.8% of patients from deprived areas were at high risk of CVD compared with 9.4% in affluent areas. By 2009, the corresponding figures were 10.3 and 9.3. The ratio between deprived and affluent was 35% in 2002 and 11% in 2009. The use of statins in patients at high risk of CVD was similar among deprived and affluent groups.

Statin usage in patients with established CVD: There was an improvement in the percentage of patients with cardiovascular disease not on statins over the study period. At baseline, 42.2% of affluent patients and 47.4% of deprived patients with CVD were not prescribed statins. By 2009, the corresponding figures were 21.4% and 23.4%.

Table 12: % achievement of indicators in deprived verses affluent patients in non spearhead practices

	Quintile 1 affluent	Quintile 5 deprived	ratio of deprived to affluent	Quintile 1 affluent	Quintile 5 deprived	ratio of deprived to affluent
	2002	2002	2002	2009	2009	2009
% of smokers	14.7	33.3	2.27	12.3	30.6	2.50
% obese	16.0	19.5	1.22	22.4	24.8	1.11
% with type 2 diabetes	2.40	4.00	1.68	4.00	5.90	1.48
% Uncontrolled BP not on medication	16.7	18.2	1.09	23.5	26.7	1.13
% High risk of CVD	9.4	12.8	1.35	9.3	10.3	1.11
% High risk CVD not on statins	90.7	90.2	0.99	66.5	62.6	0.94
% High risk CVD not on aspirin	88.6	88.0	0.99	79.4	78.6	0.99
% with CVD not on statins	42.2	47.4	1.12	21.4	23.4	1.10
% with CVD not on aspirin	37.0	34.6	0.93	35.5	36.6	1.03
% with established CVD	4.00	4.70	1.18	4.40	4.60	1.05

Health inequalities by ethnicity

The appendix shows the % of each indicator by ethnic group in patients from spearhead and non spearheads in 2002 and 2009.

There are a great number of comparisons which can be made from the table in the Appendix. However, overall there are marked variations between the ethnic groups for most measures which are consistent with the published literature. The pattern was similar for patients in spearheads compared with non spearhead PCTs. The overall trends over time were similar to those observed for the whole population.

Variations in indicators by geographical area

The associated Supplement "Health Inequalities Results by SHA (1.0).xlsx" shows trends in indicators by Strategic Health Authority area for each year 2002-2009. The appendix has a summary of this with a comparison for 2002-2009 for the spearheads only. However, it is apparent from the summary table 14, there are substantial geographical variations not only in the baseline levels for the indicators but also in the changes over the last 7 years. For example, baseline smoking rates were highest in Manchester with 34% current smokers and Manchester also showed the greatest percentage reduction in smoking with 28% current smokers by 2009. Whilst obesity levels were highest in South Yorkshire in 2002, the greatest increases over the 7 year study period were found in County Durham and Tees Valley. The reader should note, however, that these analyses are based on a sample of practices in each area derived from the QResearch database and is therefore only an estimate so should be treated with caution.

Acknowledgements

We acknowledge the contribution of EMIS and EMIS practice who contribute data for medical research. This report can be freely reproduced and copied so long as the source of the document is acknowledged and the source of the data as the QResearch database.

Scientific approval

This proposal was approved by the QResearch scientific committee in accordance with the approval from Trent MREC.

Declarations

JHC is director of QResearch which is a not-for-profit partnership between the University of Nottingham and EMIS, commercial supplier of GP computer systems to 56% of UK GPs. She is also director of ClinRisk Ltd which supplies software designed to ensure the correct implement risk prediction algorithms, such as QRISK, into clinical practice. She is also professor of clinical

epidemiology and general practice at the University of Nottingham and a GP at a local Nottingham practice.

7 Appendix

Table 13: Achievement of indicators and disease prevalence by ethnic group in spearheads and non spearheads in 2002 and 2009

spearhead 2002	% smoker	% obese	% type 2	uncontrolled BP	high risk CVD	high risk not on statins	high risk not on aspirin	CVD not on statins	CVD not on aspirin	CVD
White/Not recorded	27.7	20.0	3.4	15.3	12.1	90.1	87.2	44.0	32.5	6.4
Indian	12.2	17.9	13.5	13.9	15.6	85.4	80.7	36.0	18.6	7.5
Pakistani	19.0	23.3	17.5	9.2	24.0	86.4	85.2	38.8	21.9	8.2
Bangladeshi	29.2	16.8	21.6	15.9	21.3	86.4	86.9	51.5	27.0	9.4
Other Asian	18.1	16.2	12.0	23.5	13.2	87.8	91.1	50.0	29.4	5.0
Caribbean	26.2	30.1	13.7	12.6	15.1	80.1	73.2	61.5	28.7	5.7
Black African	11.8	27.9	6.4	19.2	2.1	86.4	72.7	65.6	31.3	1.5
Chinese	13.2	7.8	6.4	29.6	2.5	93.8	75.0	30.8	46.2	2.0
Other	31.8	22.7	7.1	13.8	8.1	86.3	80.4	60.9	31.9	3.3
spearhead 2009										
White/Not recorded	24.6	27.8	5.6	22.1	11.1	58.4	74.5	19.8	32.8	6.8
Indian	10.3	20.5	15.7	24.1	15.9	52.9	67.8	17.0	26.9	7.4
Pakistani	17.4	28.7	20.5	25.9	21.7	47.8	71.2	16.1	26.1	9.5
Bangladeshi	25.3	17.7	22.2	16.0	16.7	45.0	73.6	12.4	20.2	8.0
Other Asian	15.4	17.2	10.2	41.5	11.1	51.4	73.4	9.7	33.9	3.2
Caribbean	24.4	33.7	14.6	17.2	11.0	43.3	64.3	27.8	38.2	5.4
Black African	9.4	33.8	8.7	27.3	1.9	35.4	50.5	32.6	31.6	1.9
Chinese	11.5	8.1	7.8	28.6	1.6	15.0	40.0	26.3	52.6	1.5
Other	27.7	25.6	8.3	27.2	5.5	51.4	71.4	28.7	29.3	3.4

non spearhead 2002										
White/Not recorded	21.0	17.8	2.8	17.0	10.6	90.7	88.5	43.9	35.8	4.2
Indian	10.4	16.0	14.5	14.5	19.5	83.7	78.1	34.9	21.4	7.6
Pakistani	15.8	22.0	13.9	14.5	22.7	88.6	87.3	47.5	19.8	8.1
Bangladeshi	23.1	15.7	19.1	23.8	17.7	83.9	93.5	51.4	24.3	10.5
Other Asian	16.9	15.0	9.4	19.2	13.9	83.8	83.8	37.4	27.5	4.6
Caribbean	21.4	25.9	10.8	14.8	10.4	81.2	76.8	54.0	31.4	3.9
Black African	13.7	24.9	5.6	27.1	1.6	70.8	79.2	56.1	19.5	2.7
Chinese	12.3	7.7	4.7	19.0	1.7	78.6	78.6	52.4	47.6	2.6
Other	23.6	19.7	9.2	13.4	9.5	83.5	81.7	39.5	35.8	4.8
non spearhead 2009										
White/Not recorded	18.7	24.4	4.4	24.9	9.8	65.0	79.2	21.9	35.8	4.6
Indian	8.9	18.6	17.4	24.5	17.5	49.2	66.0	16.4	26.8	7.4
Pakistani	15.1	28.5	16.6	20.5	21.3	60.7	77.4	18.8	23.6	7.9
Bangladeshi	22.3	17.1	21.4	22.7	14.3	52.9	77.2	21.7	34.8	7.3
Other Asian	13.1	17.0	11.1	28.6	9.7	48.9	74.7	20.7	32.9	4.2
Caribbean	20.7	33.0	12.5	18.5	9.0	44.0	60.7	26.4	31.5	4.0
Black African	10.4	30.7	7.7	39.4	1.6	50.6	62.3	36.0	41.0	2.1
Chinese	10.8	8.6	5.9	29.6	0.8	50.0	78.6	39.4	45.5	1.8
Other	20.2	23.7	9.3	29.1	6.7	48.6	66.0	28.3	37.2	3.3

Table 14: Variations in achievement of indicators within spearheads 2002-2009

year	SHA	High risk of CVD %	High risk of CVD not on statins %	High risk of CVD not on aspirin %	CVD not on statins %	CVD not on aspirin percent	Current smokers %	Obesity %	uncont HBP %	Uncont HPB not on treatment %
2002	North East London	11.5	87.6	83.2	47.8	30.5	29.6	20.3	3.9	19.9
2009	North East London	9.6	55.4	75.1	21.2	31.4	26.4	24.8	2.4	23.7
% improvement	**North East London**	**0.84**	**0.63**	**0.90**	**0.44**	**1.03**	**0.89**	**1.22**	**0.62**	**1.19**
2002	Northumberland, Tyne & Wear	12.8	89.2	85.5	42.3	29.3	26.6	21.0	4.4	12.1
2009	Northumberland, Tyne & Wear	11.6	57.0	70.6	23.0	35.5	23.4	28.6	2.9	26.0
% improvement	**Northumberland, Tyne & Wear**	**0.91**	**0.64**	**0.83**	**0.54**	**1.21**	**0.88**	**1.36**	**0.66**	**2.16**
2002	County Durham & Tees Valley	11.7	92.7	91.7	57.6	41.1	27.2	19.2	3.6	22.5
2009	County Durham & Tees Valley	11.4	58.6	75.8	17.7	28.6	23.8	29.5	2.9	17.9
% improvement	**County Durham & Tees Valley**	**0.97**	**0.63**	**0.83**	**0.31**	**0.70**	**0.88**	**1.54**	**0.82**	**0.80**
2002	Cumbria & Lancashire	11.5	89.1	87.4	40.0	33.0	26.4	18.8	4.4	14.2
2009	Cumbria & Lancashire	10.5	58.5	72.2	19.0	31.1	23.6	25.4	2.4	23.2
% improvement	**Cumbria & Lancashire**	**0.92**	**0.66**	**0.83**	**0.48**	**0.94**	**0.90**	**1.35**	**0.54**	**1.63**
2002	Greater Manchester	12.8	89.1	89.4	43.2	31.7	34.0	20.5	4.3	15.1
2009	Greater Manchester	11.3	52.9	78.0	18.4	33.1	28.1	28.5	2.8	20.8
% improvement	**Greater Manchester**	**0.88**	**0.59**	**0.87**	**0.43**	**1.04**	**0.83**	**1.39**	**0.65**	**1.38**
2002	South Yorkshire	12.7	89.6	84.7	38.4	29.4	27.4	22.3	5.2	13.7
2009	South Yorkshire	12.1	57.5	73.1	17.9	31.5	24.5	31.4	3.2	20.5
% improvement	**South Yorkshire**	**0.95**	**0.64**	**0.86**	**0.47**	**1.07**	**0.89**	**1.41**	**0.61**	**1.49**
2002	Birmingham & The Black Country	12.6	91.8	88.3	44.1	32.7	24.2	19.8	5.0	14.7
2009	Birmingham & The Black Country	11.9	61.2	77.7	18.0	32.7	21.5	28.1	3.6	20.0
% improvement	**Birmingham & The Black Country**	**0.94**	**0.67**	**0.88**	**0.41**	**1.00**	**0.89**	**1.42**	**0.72**	**1.36**