Outcomes and inequalities in diabetes from 2004/5 to 2011/12: English longitudinal study

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Abstract

Background

Outcomes of diabetes care are unequal and the NHS has a duty to consider reducing inequality in healthcare outcomes.

Aim

To quantify trends in socioeconomic inequality in diabetes outcomes.

Design and Setting

Whole-population longitudinal study of 32,482 neighbourhoods (Lower Layer Super Output Areas) in England between 2004/5 and 2011/12.

Method

Slope indices of inequality between more and less deprived neighbourhoods measured annually for: (i) glycated haemoglobin control in diabetics, (ii) emergency hospitalisation for diabetes and (iii) mortality from diabetes.

Results

Between 2004/5 to 2011/12 glycaemic control improved in all social groups, although inequality was unchanged as measured by the SII (0.04, 95% CI -0.43 to 0.52). Diabetes mortality improved in all social groups, with faster mortality declines in more deprived neighbourhoods. Inequality in diabetes mortality improved, with the SII falling by 2.68 (95% CI 1.93 to 3.43) resulting in 594 (95% CI 420 to 767) fewer deaths. In contrast emergency hospitalisations for diabetes increased in all social groups, with faster growth in more deprived neighbourhoods. The socioeconomic gradient increased with the SII widening by 19.59 admissions for diabetes per 100,000 (95% CI 16.00 to 23.17) resulting in an increase in excess admissions associated with socioeconomic inequality of 5,991 (95% CI 5,084 to 6,899) compared to 2004/5.

Conclusion

In diabetes mortality declined faster, but emergency hospitalisation grew faster in more deprived neighbourhoods. Unequal growth in hospitalisation for diabetes is partly due to increased diabetes prevalence and patients living longer, but may also be due to over-use of glycaemic control medication.

How this fits in

More than 2.7 million adults in the UK had a diagnosis of diabetes in 2013, 90% of which is type II diabetes.

Type II diabetes is socially patterned with prevalence 50% higher in the most deprived fifth of the population compared with the least deprived fifth.

Our research found that mortality from diabetes improved faster in more deprived neighbourhoods between 2004/5 and 2011/12, inequalities in glycaemic control were unchanged, while inequalities in emergency hospitalisations for diabetes complications increased faster.

Introduction

In 2013, 2.7 million adults over the age of 17 were diagnosed with diabetes in the UK.[1] 10% had type I diabetes [2] and 90% had type II diabetes, which is more likely to be influenced by lifestyle factors.[3] Type II diabetes is socially patterned, with prevalence approximately 50% higher in the most deprived compared with the least deprived quintile group.[4] Both types of diabetes have potentially serious complications decreasing both quality and length of life.[3] The NHS in England spent £3.9 million on diabetes services in 2009-10, approximately 4% of the NHS budget. [5] One important aspect of diabetes management is the control of HbA1c (glycated haemoglobin) levels, which reduces the risk of complications, hospitalisation and mortality. [6]

In 2003, the UK Government made reducing health inequality a key priority of national health policy. [7, 8] This was supported by several major investments with potential impact on reducing inequalities. Firstly, the Quality and Outcomes Framework (QOF) pay-for-performance programme introduced in 2004.[9] The QOF contains financial incentives for achieving clinical targets in controlling glycaemia, cholesterol levels, and blood pressure; and also for the recording of retinal screening, foot examination, neuropathy testing, and urine examination for microalbuminuria. Secondly, the 'Equitable Access to Primary Care' programme rolled out in 2008 invested £250 million in the 25% most under doctored primary care trusts (PCTs), providing over 100 new general practices and an additional GP-led health centre in each PCT.[10, 11] Thirdly, targeted support for effective primary care interventions for chronic conditions (including diabetes) in disadvantaged adults from 2007 to 2009.[12] In 2012, the NHS Health and Social Care Act gave the NHS an explicit duty to consider reducing inequalities in healthcare outcomes.[13] In this study we examine NHS equity performance in tackling inequalities in diabetes outcomes during this key period.

Methods

We identified three indicators to track socioeconomic inequality in the outcomes of care for diabetes along the patient pathway. These indicators were developed using an iterative process involving the public, public health experts and NHS experts including those from primary and secondary care. [8]

The first indicator was the achievement of good glycaemic control in patients with diabetes using the lower threshold target for HbA1c from QOF. We compared the number of people achieving this threshold with the number of people registered as having diabetes at GP practice level. The

threshold has changed on various occasions since the inception of QOF in 2004/5 as detailed in Table 1 and we used the relevant threshold for each period.

The second indicator was preventable emergency hospitalisation for diabetes. We counted the number of people per 100,000 population having one or more emergency hospitalisations for those diabetes complications that are defined as being preventable by the NHS outcomes framework. [14] The ICD-codes for these complications are listed in Table 2.

The final indicator was amenable mortality from diabetes related causes. This was defined as the number of deaths in a given year per 100,000 population under the age of 75 from diabetes related causes considered amenable to health care by the ONS (primary cause of death ICD-10 codes E10 to E14).[15]

For glycaemic control, we started with QOF achievement data which was available at GP practice-level. We then used the 'NHS Attribution Data Set' of GP-registered populations to attribute glycaemic control data from practice to neighbourhood level using lower layer super output areas (LSOAs). Where LSOAs were attributed to more than one practice a population weighted average of glycaemic control scores from the relevant practices were used, assuming that the same level of glycaemic control was achieved across all practice patients independent of their LSOA of residence. There are 32,482 LSOAs in England each consisting of approximately 1,500 people (minimum 1,000, maximum 3,000). The index of multiple deprivation (IMD 2010) overall rank was used to assign deprivation ranks to LSOAs. Each indicator was calculated at LSOA level for each period between 2004/5 and 2011/12 inclusive with each period running from the beginning of April to the end of March the following year.

For the emergency hospitalisation outcome we used the Hospital Episodes Statistics (HES) dataset provided by the Health and Social Care Information Centre (HSCIC). For the amenable mortality outcome we used the Office of National Statistics (ONS) mortality dataset. These outcomes are available at LSOA-level and were indirectly standardised for age and sex at small area level.

We measured absolute and relative inequality in these indicators using the slope index of inequality (SII) and relative index of inequality (RII) respectively. The SII was computed for each year by estimating an ordinary least squares regression of the LSOA level indicator value against the LSOA level deprivation fractional rank (measured on a 0-1 scale where 0 is the least deprived neighbourhood and 1 is the most deprived). The RII was calculated by expressing the SII as a proportion of the national mean level of the indicator. The SII can be interpreted as the modelled difference in event count between the least deprived and most deprived LSOAs in the country,

taking into account the distribution of event counts across the deprivation range. The RII can be interpreted as the proportional gap between the most and least deprived areas. For emergency hospitalisation and amenable mortality, where "more is worse", a positive association implies "pro-rich" inequality whilst a negative association implies "pro-poor" inequality. To ease comparison with the glycaemic control indicator, where "more is better", we multiplied the SII by minus one, so that a positive sign also indicates "pro-rich" inequality. The area under the SII line was used to estimate the excess number of people experiencing the outcome measured by the indicator associated with socio-economic inequality – the "real inequality gap". The assumption being that the level of the outcome observed in the least deprived area was the optimal level of the outcome and anything above this level for bad outcomes and below this level for good outcomes represented the excess associated with socio-economic inequality.

Linear regression models were computed using pooled data for the first and last years, including interaction terms between year and deprivation, to determine the magnitude and statistical significance of changes in inequality between the beginning and end of the analysis period. All statistical analysis was carried out using R (version 3.2.3).

Results

In 2004/5 there were substantial socioeconomic gradients in both mortality and preventable hospitalisation for diabetes, and a smaller socioeconomic gradient in glycaemic control, with outcomes less favourable in more deprived neighbourhoods (figure 1). Figure 2 displays the trends from 2004/5 to 2011/12 comparing the most deprived (Q1) and least deprived (Q5) quintile groups of small areas in England. By 2011/12 substantial inequalities still remained and were associated with a deficit of 1.90 (95% CI 1.74 to 2.06) percentage points in diabetes related primary care quality (table 3), 22,189 (95% CI 21,498 to 22,881) excess preventable hospitalisations for diabetes related causes and 582 (95% CI 478 to 687) excess avoidable deaths due to diabetes related causes.

Glycaemic control (table 3)

In 2004/5 mean glycaemic control performance in England was 58.64% (95% CI 58.63 to 68.64). The SII was 3.76 (95% CI 3.40 to 4.11) indicating that the most deprived patients are nearly four percentage points less likely to achieve good glycaemic control than the least deprived patients. Between 2004/5 to 2011/12 there was an improvement in mean glycaemic control performance of 3.72 percentage points (95% CI 3.72 to 3.72). However, inequality in glycaemic control was unchanged over the period according to both absolute and relative indices of inequality (SII

difference 0.04, 95% CI -0.43 to 0.52). There was an improvement in primary care quality in between 2010/11 and 2011/12 which may be the result of change in the HbA1C target from <7 to <7.5 that year. This also may have reduced hospitalisation (especially hypoglycaemia) due to less intensive treatment.

Emergency hospitalisation (Table 3 and appendix 1)

In 2004/5 the mean rate of preventable hospitalisation for diabetes was 59.84 (95% CI: 59.83 to 59.85) admissions per 100,000 population. The SII was 64.66 (95% CI: 62.22 to 67.11) and socioeconomic inequality was associated with an excess of 16,199 (95% CI: 15,587 to 16,810) admissions. Between 2004/5 and 2011/12 admissions increased by 11.4 (95% CI 11.38 to 11.41) per 100,000 population. The socioeconomic gradient also widened in both absolute and relative terms, with the SII widening by 19.59 admissions for diabetes per 100,000 (95% CI 16.00 to 23.17) resulting in an increase in excess admissions associated with socioeconomic inequality of 5,991 (95% CI 5,084 to 6,899) compared to 2004/5. There was a fall in admissions between 2010/11 and 2011/12 which may be the result of change in the HbA1C target from <7 to <7.5 that year leading to less hypoglycaemia.

The largest increases in numbers of admissions were for unspecified hypoglycaemia (from 7476 to 11564), type 2 diabetes without complications (from 6662 to 8401), type 1 diabetes with ketoacidosis without coma (from 6271 to 8841) and type 2 diabetes with ketoacidosis (from 1342 to 2278).

Diabetes mortality (Table 3 and appendix 2)

In 2004/5 the mean rate of mortality from diabetes-related causes was 3.62 (95% CI 3.57 to 3.67) deaths per 100,000 population. The SII was 5.10 (95% CI 4.49 to 5.71) and socioeconomic inequality was associated with an excess of 1,176 (95% CI 1,036 to 1,306) deaths. The most common causes of mortality were unspecified diabetes without complications, and unspecified diabetes mellitus with peripheral circulatory complications.

Between 2004/5 and 2011/12 average mortality fell by 1.57 (95% CI 1.49 to 1.65) deaths per 100,000 population. Inequality in diabetes mortality as measured by the SII also improved, falling by 2.68 (95% CI 1.93 to 3.43) resulting in 594 (95% CI 420 to 767) fewer deaths. The main sub-categories of mortality reduction were unspecified diabetes without complications which fell from 810 to 320 deaths, and unspecified diabetes mellitus with peripheral circulatory complications which fell from 257 to 139 deaths. In contrast, there was a rise in deaths in unspecified diabetes with ketoacidosis from 84 to 155 deaths.

Discussion

Summary

This is the first study to examine how the NHS performed in reducing socioeconomic inequalities in diabetes outcomes from 2004/5 to 2011/12. During this period, healthcare outcomes improved in all social groups for glycaemic control and mortality from diabetes, with larger and faster mortality reductions in more deprived social groups. By contrast, both average outcomes and inequalities deteriorated in relation to preventable emergency hospitalisation for diabetes-related complications. The fall in diabetes-related mortality is a remarkable achievement, given that diabetes prevalence is rising and the targeting of NHS resources often does not promote health equity. [16] This finding is consistent with other UK literature and a sign of NHS success with improving the quality of healthcare for diabetes, and more importantly improving the quality of healthcare for coronary heart disease and other co-morbidities which contribute to diabetic mortality.[17] Falling mortality may be partly due to the increase in prescribing of statins in diabetes patients and more aggressive control of blood pressure, lipid levels and hyperglycaemia, which has been shown to reduce morbidity and mortality.[18] By contrast, the growth in emergency admissions for diabetes is worrying. It is partly explained by better disease detection by the recent addition of the HbA1c test to diagnose diabetes, and increasing prevalence of diabetes rising from 3.3% in 2004/5 to 5.8% in 2011/12. [19,20,21] There will also be an "unhealthy survivor" effect, whereby people with diabetes no longer die prematurely but instead survive long enough to have additional admissions for diabetes complications.[22]

It is also possible that over-use of glucose control medication may be leading to more preventable hospitalisation with hypoglycaemic attacks, which have increased by 50% over this time period. Data from randomised clinical trials report that intensive glycaemic control immediately increases the risk of severe hypoglycaemia 1.5- to 3-fold. [23] Financial incentives in primary care for reaching targets for HbA1c have increased from 27 points in 2004/5 to 35 points in 2011/12, the target for one indicator has been lowered from HbA1C <10 to HbA1C <9, and an additional indicator has been introduced with a target of HbA1c <8.

Strengths and limitations

This study used ten years of data including outcome data on virtually all individuals with diabetes in England, although the findings are limited to the period of this study. It examined three important outcome of diabetes care at different stages of the patient pathway. It also used both absolute and relative inequality measures based on the entire socioeconomic gradient of all 32,482 LSOAs in

England. There were changes in the definition of the indicator of good glycaemic control over time, especially for the two years 2009/10 and 2010/11, which complicate the interpretation of trends in this indicator. However, there is no particular reason to think this would impact on the relative differences between deprived and affluent neighbourhoods, and so the relative index of inequality (RII) remains a fairly robust indicator of inequality trends in glycaemic control.

Comparison with existing literature

Our findings of an increase in preventable hospitalisations for diabetes complications concur with and extend those of Dusheiko and colleagues, who reported an increasing trend in all English GP practices from 2004/5 to 2006/7.[24] Calderón-Larrañaga however, reported a fall in diabetes related preventable hospitalisation in the years 2004 to 2009.[25] These differences may be explained by the fact that Calderón-Larrañaga adjusted the rate of preventable hospitalisation for the prevalence of diabetes, whereas Dusheiko adjusted the rate of preventable hospitalisation by population count, age and sex alone as we have done in our analysis. Both approaches have their merits, since although diabetes is becoming more common the increase in prevalence may be over-estimated due to better case finding. [19] Our findings of an increase in the proportion of patients meeting targets for HbA1c are similar to findings in Australia, however contrast with findings in the USA where no significant change occurred between 2007 and 2012. [26, 27] Our findings of a fall in mortality for diabetes are similar to the USA, but contrast with findings in Australia where mortality rates have been unchanged from 1997 to 2012. [27, 28] Our findings of increased admissions are similar to both Australia and the USA. [27, 29] The increasing admissions for diabetic ketoacidosis in type 2 diabetes may be a side effect of newer diabetic drugs. [30]

Implications for research and practice

The causes of the increase in preventable admissions for hypoglycaemia and ketoacidosis in both type I and type II diabetes and increasing inequalities need further research. [31] Reducing inequalities in diabetes is likely to require complex interventions to improve the coordination of care between multiple providers of care both within and outside the healthcare system. GPs need to be aware of socioeconomic inequalities in diabetes care. NICE should review the current target HbA1C of 7.0 mmol in light of increasing emergency admissions with hypoglycaemia. GPs should follow NICE recommendations in patients who have experienced hypoglycaemia and have an individualised

HbA1C target for these patients. [2] GPs need to be alert to the risk of DKA in patients taking SGLT2 inhibitors. [30]

Ethical approval: not required.

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Table 1 QOF target for glycated haemoglobin (HbA1c) level [9]

Indicator name in QOF	Years	Glycated haemoglobin (HbA1c) threshold
DM6	2004/5; 2005/6	≤ 7.4%
DM20	2006/7; 2007/8; 2008/9 (replaced DM6)	≤ 7.5%
DM23	2009/10; 2010/11 (replaced DM20)	≤ 7%
DM26	2011/12 onward (replaced DM23)	≤ 7.5%

Table 2 Office for National Statistics classification of preventable diabetes admissions (all codes) and amenable deaths

Type of complication	ICD-10
Preventable admissions codes	E100, E101, E107, E108, E109,E110, E111, E117, E118,E119, E120, E121, E127, E128, E129, E130, E131, E137, E138, E139, E140, E141, E147, E148, E149, E162,
Amenable mortality codes	All ICD-10 codes E10 to E14

Code type	Definition
ICD-10 codes	E10: Insulin-dependent diabetes mellitus E11: Non-insulin-dependent diabetes mellitus E13: Other specified diabetes mellitus E14: Unspecified diabetes mellitus
ICD-10 extension	0: With coma 1: With ketoacidosis 7: With multiple complications 8: With unspecified complications 9: Without complications

**Table 3 Socioeconomic healthcare inequalities in England, comparing 2004/2005 with 2011/2012**

Indicator	England Mean (95% CI)			SII (95% CI)			RII (95% CI)			Real Inequality Gap (95% CI)		
	2004	2011	Change	2004	2011	Change	2004	2011	Change	2004	2011	Change
Diabetes Primary Care Quality	58.64 (58.63 to 58.64)	62.36 (62.35 to 62.36)	3.72 (3.72 to 3.72)	3.76 (3.4 to 4.11)	3.8 (3.48 to 4.11)	0.04 (-0.43 to 0.52)	0.06 (0.06 to 0.07)	0.06 (0.06 to 0.07)	0 (-0.01 to 0)	1.88 (1.7 to 2.05)	1.9 (1.74 to 2.06)	0.02 (-0.21 to 0.25)
Preventable Emergency Hospitalisation for diabetes	59.84 (59.83 to 59.85)	71.23 (71.22 to 71.25)	11.4 (11.38 to 11.41)	64.66 (62.22 to 67.11)	84.25 (81.62 to 86.88)	19.59 (16.00 to 23.17)	1.08 (1.04 to 1.12)	1.18 (1.15 to 1.22)	0.1 (0.05 to 0.16)	16199 (15587 to 16810)	22189 (21498 to 22881)	5991 (5084 to 6899)
Amenable Mortality from diabetes	3.62 (3.57 to 3.67)	2.04 (1.98 to 2.11)	-1.57 (-1.65 to -1.49)	5.1 (4.49 to 5.71)	2.42 (1.98 to 2.85)	-2.68 (-3.43 to -1.93)	1.41 (1.24 to 1.58)	1.18 (0.97 to 1.39)	-0.23 (-0.5 to 0.04)	1176 (1036 to 1316)	582 (478 to 687)	-594 (-767 to -420)

The England means and the SII indices are measured in terms of average primary care quality, preventable hospitalisation per 100,000, and amenable mortality per 100,000. The RII indices are the SII indices as a proportion of the England means. The inequality gaps refer to the average quality loss attributable to inequality, the total excess hospitalisations attributable to inequality, and the total excess mortality attributable to inequality. (RII, relative index of inequality; SII, slope index of inequality.)
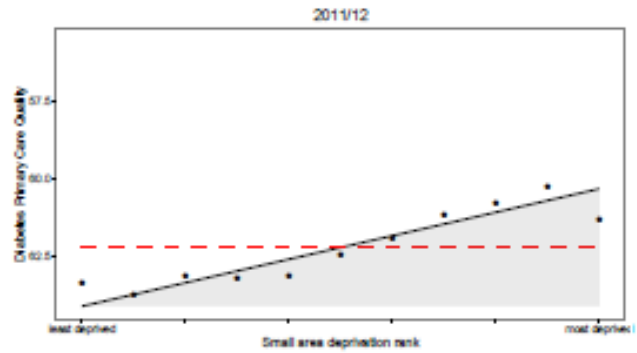
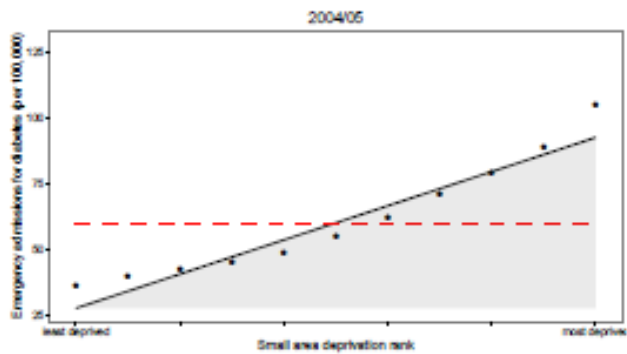# Figure 1 Scatter plots of indicators against deprivation level in 2004/5 and 2011/12
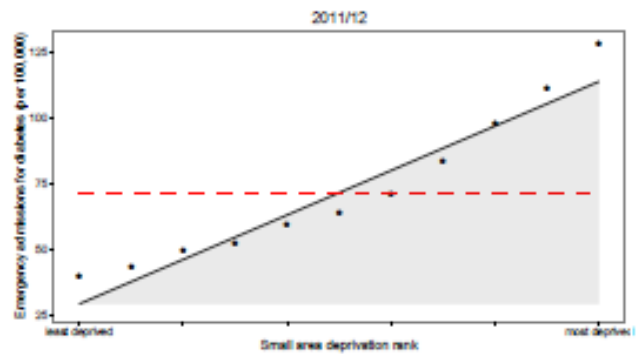
Diabetes Primary Care Quality
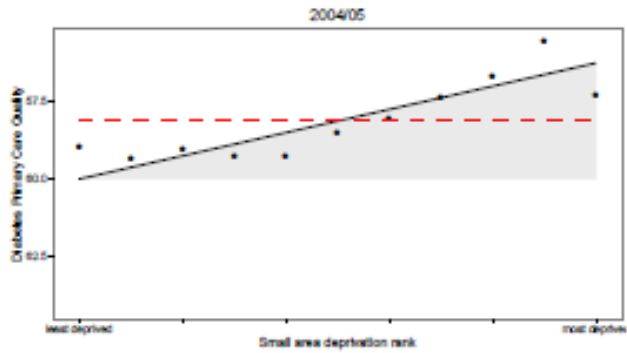
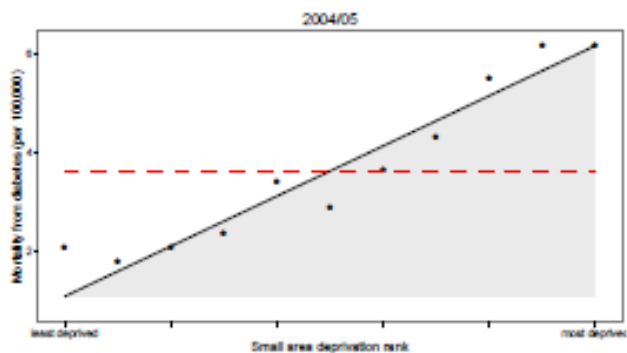Diabetes Primary Care Quality: clinical performance in the quality and outcomes framework

Emergency Hospitalisation for diabetes

Emergency Hospitalisation: hospitalisations per 100,000 population for conditions related to diabetes adjusted for age and sex

Mortality from diabetes

Mortality from diabetes: deaths under 75 years of age per 100,000 population from causes related to diabetes adjusted for age and sex
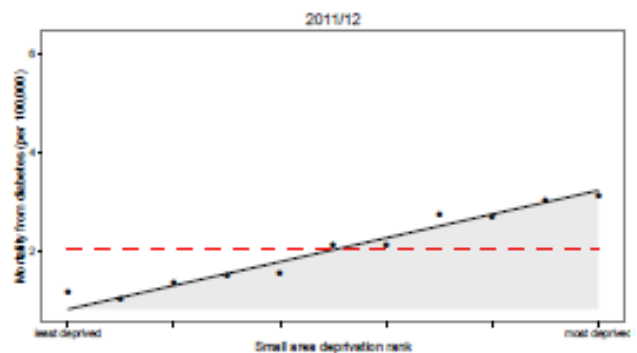
Figure 2 Inequity trends in indicators from 2004/5 to 2011/12s

Diabetes Primary Care Quality

Diabetes Primary Care Quality: clinical performance in the quality and outcomes framework

Emergency Hospitalisation for diabetes

Emergency Hospitalisation: hospitalisations per 100,000 population for conditions related to diabetes adjusted for age and sex

Mortality from diabetes

Mortality from diabetes: deaths under 76 years of age per 100,000 population from causes related to diabetes adjusted for age and sex
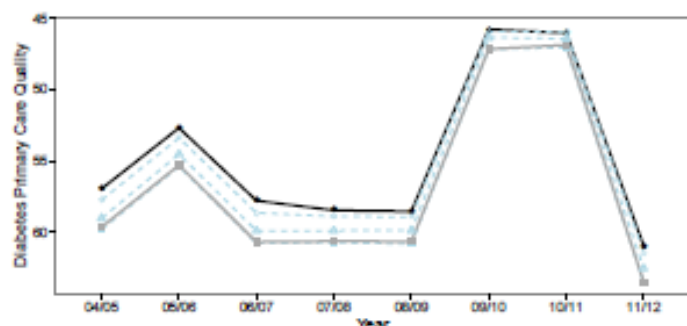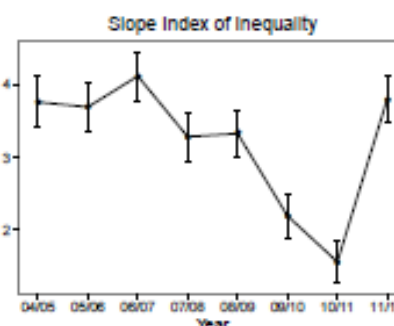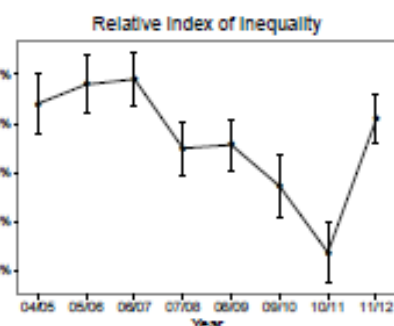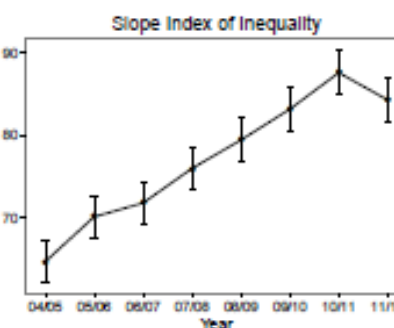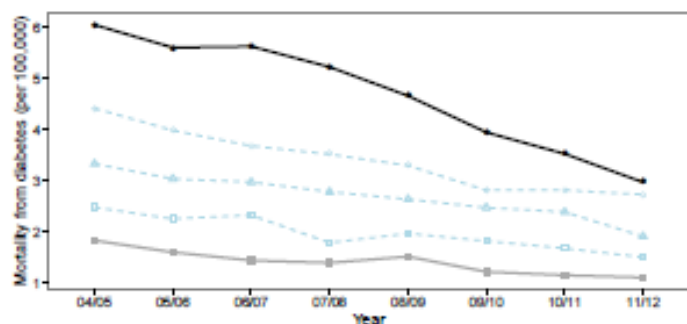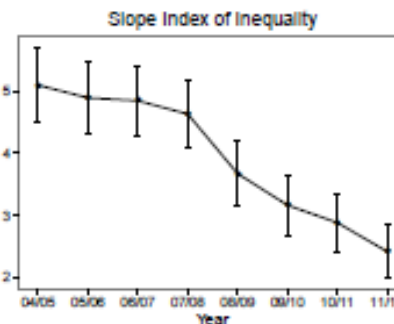
Appendix 1: preventable emergency hospitalisation for diabetes

ICD-10 code	Q1 (most deprived); % of total admissions for ICD-10 code			Q5 (most affluent): % of total admissions for that ICD-10			Overall numbers of admissions for ICD-10 code		
	2004/5	2011/12	Change	2004/5	2011/12	Change	2004/5	2011/12	Change
E100 type 1 diabetes with coma	27%	28%	1%	14%	16%	2%	640	313	-327
E101 type 1 diabetes with ketoacidosis without coma	31%	31%	0%	13%	12%	-1%	6271	8841	2570
E107 type 1 diabetes, multiple complications	34%	0%	-34%	21%	42%	21%	53	12	-41
E108 type 1 diabetes with unspecified complications	28%	21%	-7%	14%	*	*	310	39	-271
E109 type 1 diabetes without complications	26%	28%	2%	16%	15%	-1%	6831	6527	-304
E110 type 2 diabetes with coma	29%	32%	3%	12%	12%	0%	828	774	-54
E111 type 2 diabetes with ketoacidosis	32%	32%	0%	11%	12%	1%	1342	2278	936
E117 type 2 diabetes with multiple complications	14%	*	*	*	*	*	37	9	-28
E118 type 2 diabetes with unspecified complications	32%	34%	2%	8%	11%	3%	220	76	-144
E119 type 2 diabetes without complications	32%	32%	0%	12%	12%	0%	6662	8401	1739
E121 malnutrition related diabetes with ketoacidosis	0%	0%	0%	*	0%	*	*	0	*
E129 malnutrition related diabetes no complications	*	*	*	*	*	*	*	*	0
E130 other specified diabetes with coma	*	*	*	*	*	*	6	10	*
E131 other specified diabetes with ketoacidosis	*	47%	*	0%	12%	12%	13	43	30
E137 other specified diabetes, multiple complications	0%	0%	0%	0%	0%	0%	0	*	*
E138 other specified diabetes, unspecified complications	*	0%	*	*	*	*	*	*	*
E139 other specified diabetes without complications	24%	22%	-2%	18%	16%	-2%	134	225	91
E140 unspecified diabetes with coma	26%	24%	-2%	12%	32%	20%	91	25	-66
E141 unspecified diabetes with ketoacidosis	28%	32%	4%	13%	19%	6%	432	209	-223
E147 unspecified diabetes with multiple complications	*	*	*	0%	*	*	*	*	0
E148 unspecified diabetes with unspecified complications	40%	*	*	20%	*	*	30	6	-24
E149 unspecified diabetes without complications	29%	31%	2%	16%	12%	-4%	657	443	-214
E162 hypoglycaemia, unspecified	30%	30%	0%	12%	13%	1%	7476	11564	4088

Notes: All numbers are presented as a percentage of the total overall hospitalisations for that ICD-10 code

Data derived from patient numbers between 1 and 4 are omitted for confidentiality purposes, and displayed as *

Appendix 2: Amenable deaths from diabetes

ICD Code	Q1 (most deprived); % of total deaths for that ICD-10			Q5 (most affluent): % of total deaths for that ICD-10			Overall numbers of deaths for that ICD-`10		
	2004/5	2011/12	Change	2004/5	2011/12	Change	2004/5	2011/12	Change
E100 type 1 diabetes with coma	0%	*	*	*	0%	*	6	*	*
E101 type 1 diabetes with ketoacidosis without coma	56%	40%	-16%	13%	*	*	16	30	14
E102 type 1 diabetes with renal complications	*	*	*	*	0%	*	13	11	-2
E104 type 1 diabetes with neurological complications	*	0%	*	0%	0%	0%	*	*	*
E105 type 1 diabetes with peripheral circulatory complications	33%	*	*	0%	*	*	18	18	0
E106 type 1 diabetes with other specified complications	0%	0%	0%	0%	*	*	0	*	*
E107 type 1 diabetes, multiple complications	*	*	*	*	*	*	*	6	*
E109 type 1 diabetes without complications	31%	30%	-1%	15%	17%	2%	102	64	-38
E110 type 2 diabetes with coma	0%	*	*	0%	0%	0%	*	5	*
E111 type 2 diabetes with ketoacidosis	*	60%	*	0%	0%	0%	*	10	*
E112 type 2 diabetes with renal complications	42%	28%	-14%	0%	*	*	19	39	20
E114 type 2 diabetes with neurological complications	*	*	*	0%	*	*	*	6	*
E115 type 2 diabetes, peripheral circulatory complications	25%	34%	9%	*	13%	*	61	83	22
E116 type 2 diabetes with other specified complications	0%	0%	0%	0%	*	*	0	*	*
E117 type 2 diabetes with multiple complications	36%	29%	-7%	0%	0%	0%	14	17	3
E119 type 2 diabetes without complications	32%	23%	-9%	10%	12%	2%	188	146	-42
E140 unspecified diabetes with coma	37%	*	*	0%	0%	0%	27	15	-12
E141 unspecified diabetes with ketoacidosis	36%	42%	6%	0%	0%	0%	84	155	71
E142 unspecified diabetes, renal complications	28%	21%	-7%	13%	14%	1%	92	91	-1
E144 unspecified diabetes, neurological complications	*	0%	*	*	0%	*	6	*	*
E145 unspecified diabetes, peripheral circulatory comps.	36%	29%	-7%	11%	13%	2%	257	139	-118
E146 unspecified diabetes, other specified complications	0%	0%	0%	0%	0%	0%	*	0	*
E147 unspecified diabetes with multiple complications	24%	*	*	15%	*	*	46	32	-14
E149 unspecified diabetes without complications	32%	39%	7%	12%	10%	-2%	810	320	-490

Notes: All numbers are presented as a percentage of the total overall deaths for that ICD-10 code

Data derived from patient numbers between 1 and 4 are omitted for confidentiality purposes, and displayed as *