

# Diabetes Attributable Deaths:

## Estimating the excess deaths among people with diabetes

### Introduction

It is known that people with diabetes have higher mortality rates than those without the disease. However, when diabetes or diabetes related complications are a contributory factor to death they are not necessarily recorded on the death certificate. Clinical coding practice means that only a minority of deaths among people with diabetes from causes that can be associated with the disease have diabetes identified as the primary cause of death. As a result it is not possible to get an accurate picture of the number of deaths attributable to diabetes from routine data sources.

Estimating the excess deaths among people with diabetes or diabetes attributable deaths requires data from cohort studies or disease registers to be combined with routine population and mortality data.

### Methodology

The methodology for identifying diabetes attributable deaths follows the approach developed by the World Health Organisation (Rolglic et al 2005). This study combined data on the additional risk of dying among people with diabetes, prevalence data and mortality figures.

Data on the additional risk of people with diabetes dying compared to those without the condition was obtained from the DECODE study. The DECODE study combines data from 22 studies in eight European countries. People included in these studies have been followed up for over 15 years.

### Key Messages

- People with diabetes have a higher risk of dying at all ages under 80 years old.
- The relative increase in the risk of death is higher for women with diabetes than for men with diabetes.
- In England 26,300 deaths between the ages of 20 and 79 years in 2005 can be attributed to diabetes. This equates to 11.6% of all deaths in this age group.
- If current trends in diabetes prevalence and mortality rates continue 12.2% of deaths between 20 and 79 years will be attributable to diabetes in 2010
- The percentage of diabetes attributable deaths at PCT level varies from 17.08% to 9.25%.

Hazard ratios identify the additional risk of death in one group compared to another. For example, women aged between 40 and 59 years with diabetes are 2.54 times more likely to die than women of the same age without diabetes.

**Table 1: Hazard ratios of death with diabetes versus without diabetes**

	20 - 39 years	40 - 59 years	60 - 79 years
Males	2.54	2.17	1.91
Females	3.76	2.54	2.53

The hazard ratio data can be combined with information on diabetes prevalence, population estimates and all cause mortality data to identify diabetes attributable deaths. Estimates of the total number of people in each of the three age groups (20 - 39 years, 40 - 59 years and 60 - 79 years) with diabetes (Type 1 and Type 2) were taken from the PBS Diabetes Prevalence Model Phase 3. Population data were taken from mid year population estimates published by the Office for National Statistics. Age and sex specific mortality data were sourced from the Annual Deaths Extract. All data were for 2005.

These data were combined to estimate the number of excess deaths in people with diabetes. Excess deaths were deaths that would not have occurred if the people with diabetes had the same mortality rate as people without diabetes within a given area. As these deaths would not have occurred if there was no difference in mortality rates between people with diabetes and those without the disease in the age group they can be attributed to diabetes.

### Results

In England there were 26,300 excess deaths among people with diabetes aged between 20 and 79 years during 2005. This was 11.6% of all deaths in this age

group. Official mortality data indicates that 2705 people in this age group died with diabetes identified as the main cause of death.

If current trends in diabetes prevalence and mortality rates continue the percentage of deaths among people aged 20 to 79 years will rise to 12.2% by 2010.

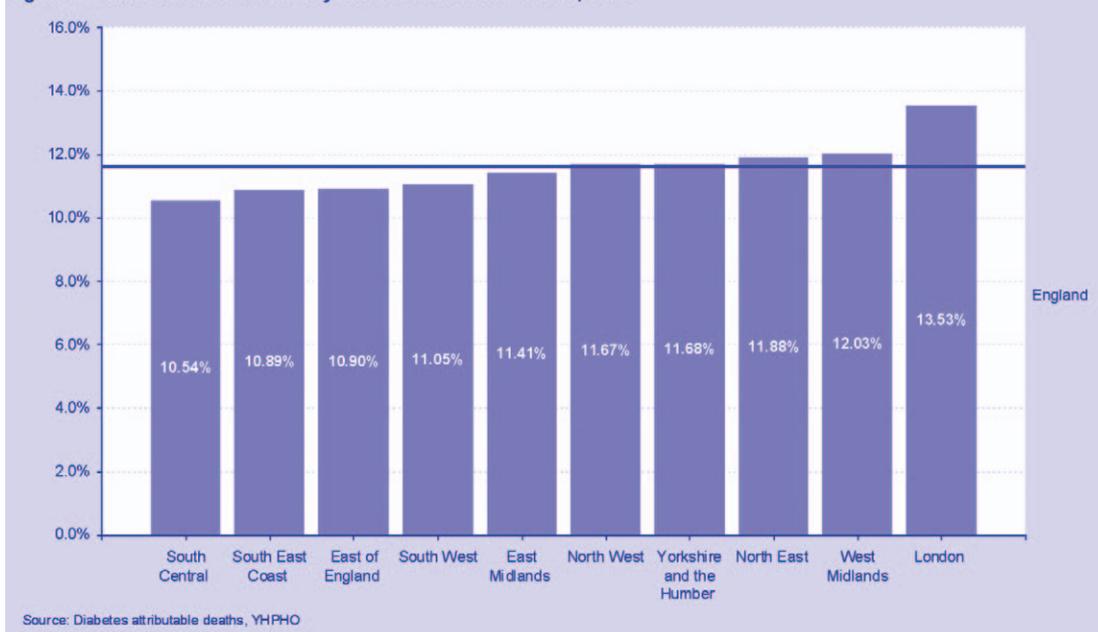
London SHA has the highest percentage of deaths attributable to diabetes between the ages of 20 and 79 years. The lowest percentage of deaths attributable to diabetes was in South West SHA.

### Key Assumptions

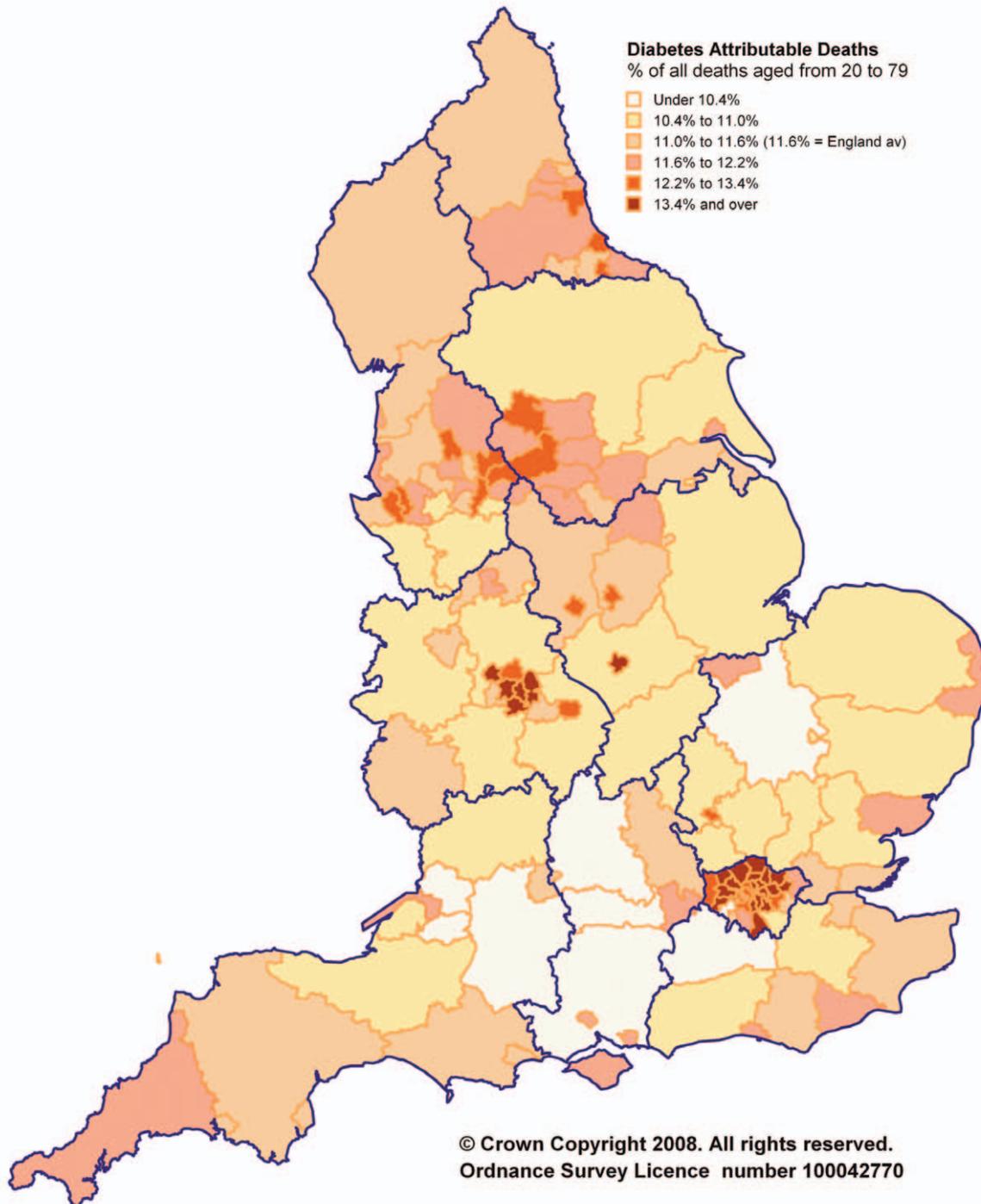
The calculations assume that

- the additional risk of death due to diabetes in England is the same as estimated by the DECODE study and does not vary by SHA or PCT
- people with undiagnosed diabetes have the same risk of death as people with diagnosed diabetes. Varying this assumption does not alter the results of the analysis substantially.

Figure 1: Deaths between 20 and 79 years attributable to diabetes, 2005



## Diabetes attributable deaths by PCT Percentage of all deaths who were aged 20 to 79



The 10 PCTs with the highest proportion of deaths between 20 and 79 years old attributable to diabetes are areas with lower proportion of the population aged over 40 years old and with substantial populations aged over 40 years from Asian and Black ethnic groups. They also experience relatively high levels of deprivation.

**Table 2: PCTs with the highest % of deaths attributable to diabetes between 20 and 79 years, 2005**

	Number	%
Newham	152	17.08%
Brent Teaching	147	16.84%
Tower Hamlets	108	16.02%
Leicester City	204	15.92%
Ealing	160	15.21%
City and Hackney Teaching	104	15.02%
Harrow	108	14.90%
Lambeth	138	14.65%
Waltham Forest	118	14.60%
Lewisham	146	14.59%

The PCTs with the lowest proportion of deaths between the ages 20 and 79 years attributable to diabetes have a greater than average proportion of the population aged 40 years and over. They also tend to have lower than average levels of deprivation.

**Table 3: PCTs with the lowest % of deaths attributable to diabetes between 20 and 79 years, 2005**

	Number	%
Buckinghamshire	199	9.25%
South Gloucestershire	90	10.02%
Berkshire West	149	10.03%
Wiltshire	177	10.03%
Surrey	406	10.09%
Cambridgeshire	216	10.10%
Hampshire	498	10.16%
Bath and North East Somerset	73	10.37%
Richmond and Twickenham	55	10.39%
North Yorkshire and York	360	10.42%

The figures presented in this document give an estimate of the number of excess deaths among people with diabetes. They show the number of deaths that could potentially be prevented if the mortality rate among people with diabetes was reduced to that of the population without the disease. They should be considered as estimates of the likely impact of diabetes on mortality rather than actual mortality figures.

A complete list of the diabetes attributable deaths for Primary Care Trusts can be found at [www.yhpho.org.uk](http://www.yhpho.org.uk).

### Contact

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### References

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