diabetes
Health Intelligence

MAY 2012

Mortality among inpatients with diabetes

Key findings for England

Background

It is known that people with diabetes are more likely to be admitted to hospital and stay longer than their peers without diabetes. However, little is known about the relationship between having diabetes and inpatient mortality.

This work assesses the risk of mortality among inpatients with diabetes after appropriate adjustment for case mix. It assesses local variation and identifies potential outliers using trust level measures of mortality.

The analysis was instigated by Dr Rowan Hillson, National Clinical Director for Diabetes.

Methods

Hospital Episode Statistics (HES) was used to identify all hospital admissions between 1 April 2009 and 31 March 2011. Patients were assessed to have diabetes if one or more codes for diabetes (ICD-10 E10-E14) were recorded as a primary or secondary diagnosis. Deprivation was assessed using the Index of Multiple Deprivation 2007 based on the patient's home postcode.

Admissions to specialist and community provider trusts, admissions relating to pregnancy and maternity and babies born in hospital were excluded from the analysis.

Statistical models (binary regression) were used to assess the impact of case-mix and the type of trust on the additional risk of dying associated with having diabetes. The case mix adjustment included age, sex, method of admission (elective, emergency or transfer from another trust), reason for admission (Health Resource Group 3.5 chapter) and type of Trust (acute teaching trust, large acute trust, medium acute trust and small acute trust).

The results of the statistical models were used to adjust mortality for case mix and identify the additional risk of dying as an inpatient due to having diabetes. Trust level adjusted standardised mortality ratios were calculated comparing mortality among inpatients with diabetes to all inpatients with diabetes in the analysis and inpatients without diabetes in the same trust.

Key messages

- After standardising for age, sex, method of admission, HRG chapter and type of hospital, inpatients with diabetes are 9.9% more likely to die in hospital than inpatients without diabetes.
- There is no social gradient in the risk of dying as an inpatient among those with diabetes despite a strong social gradient among those without diabetes
- Across England there is considerable variation in the case mix adjusted mortality of inpatients with diabetes with 24 (16%) trusts identified as potential outliers.
- When mortality among inpatients with diabetes is compared to that among inpatients without diabetes at the same trust, there is less local variation in the additional risk of dying.

YHPHO

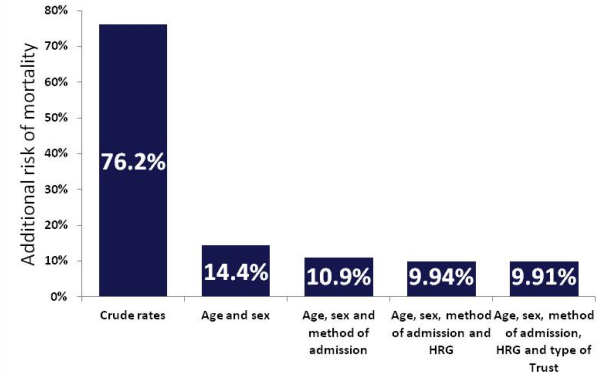
Diabetes Health Intelligence is a strategic programme within Yorkshire and Humber Public Health Observatory providing national diabetes health intelligence

Findings

There were 13,140,750 admissions in 148 acute trusts that met the inclusion criteria. Of these, 399,591 (11.2%) had diabetes as a recorded diagnosis. There were 399,591 deaths in hospital in this cohort of which 72,769 (18.2%) were among patients with diabetes.

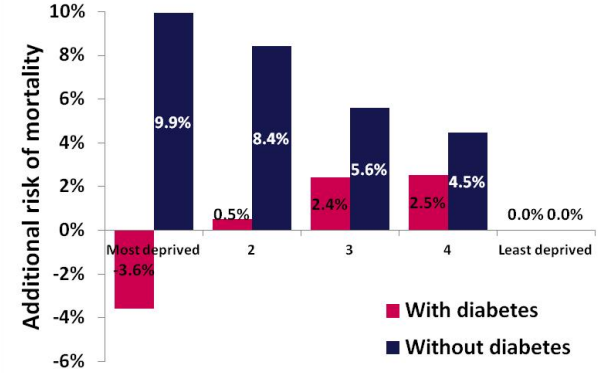
The crude risk of mortality was 76.2% higher among inpatients with diabetes compared to those without diabetes. However, standardisation for casemix reduced this additional risk considerably. After adjusting for age, sex, method of admission, reason for admission (HRG) and type of trust the risk of dying was 9.9% higher among inpatients with diabetes compared to those without diabetes (see chart 1).

Chart 1: Impact of standardisation on additional risk of mortality among inpatients with diabetes



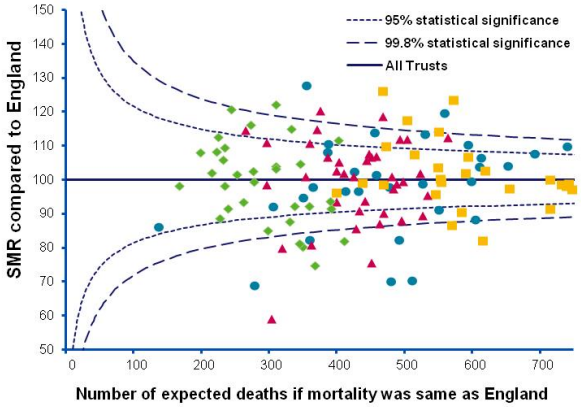
There was no deprivation gradient in the case mix adjusted risk of dying among inpatients with diabetes despite mortality among those without diabetes increasing with deprivation (see chart 2).

Chart 2: Deprivation gradient



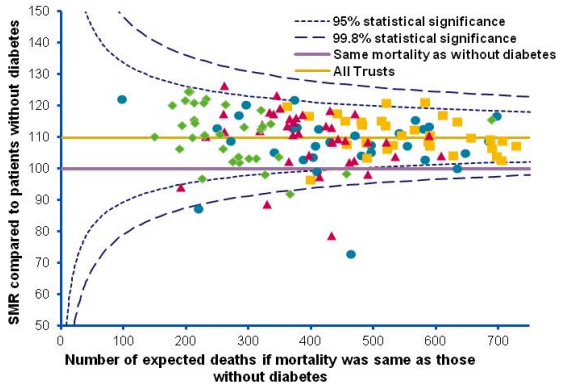
Analysis of trust level data on mortality standardised to all patients in the study shows that there were nine clear outliers trusts (above the 99.8th percentile) and 15 potential outlier trusts (between the 95th and 99.8th percentile). In these trusts, inpatient mortality among those with diabetes is significantly higher than average (chart 3).

Chart 3: Compared to all inpatients with diabetes



When mortality among inpatients with diabetes is compared to mortality in those without diabetes in the same trust there were no clear outlier trusts and five potential outlier trusts (see chart 4).

Chart 4: Compared to inpatients in trust without diabetes



Further analysis

Summary profiles identifying the standardised mortality compared to other similar trusts for each trusts included in the analysis can be accessed at http://bit.ly/JPFdDo

Contact

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