Huge falls in diabetes mortality in UK and Canada since mid-1990s

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Both the UK and Canada have experienced huge falls in diabetes-related mortality since the mid-1990s, with the result that the gap in mortality risk between those with and without diabetes has narrowed substantially. The findings are in new research published in *Diabetologia*, the Journal of the European Association for the Study of Diabetes (EASD), and written by Dr Lorraine Lipscombe, Women's College Hospital, Women's College Research Institute, Toronto, ON, Canada, and Adjunct Scientist, Institute for Clinical Evaluative Sciences, Toronto, Canada; and Dr Marcus Lind, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden and colleagues.

A previous review of studied investigated diabetes mortality suggested that having diabetes increased a person's mortality risk by 80% compared with the general population. However, many studies in the review were from before 2000, and some recent studies have suggested diabetes might increase mortality by less than this. Thus in this new study, the authors estimated the current mortality rate ratio in patients with versus without diabetes and whether it has changed over time. The UK and Canada were selected for analysis because the authors in both nations and Sweden are part of an ongoing collaboration, and this is a study objective that cannot be examined in many countries, since there are limited numbers of databases with long follow-up which are also population-based with mortality data on individuals both with and without diabetes. Both Canada and the UK hold such data.

The population-based databases from the province of Ontario, Canada,

and The Health Improvement Network (THIN) database from the UK, from years 1996 to 2009 were used to calculate mortality rates in persons with and without diabetes.

The excess risk of mortality estimated during 2009 was 51% in Ontario and 65% in THIN for diabetic patients on a group level, compared to 90% and 114%, respectively, in the year 1996. The excess risk of mortality for diabetic patients declined to a similar extent for men and women over the study period, and no significant differences between sexes were observed in 2009. "It is noteworthy that the prevalence of diabetes in Ontario (adults 20 years or older) increased from 5.4% to 11.4% over the study period, and in the THIN cohort there was an increase in prevalence from 3.2% to 5.9% over the corresponding time period," says Lipscombe.

The excess risk of mortality for diabetic patients decreased in all age groups over time—approximately 25%-40% lower in age groups below 64 years and 50%-65% lower in those aged 64 years and older during the study period. In 2009 the excess risk of mortality for individuals with diabetes 20-44 years of age was 70%-80% in both cohorts. In those 45-64 years old, mortality was approximately doubled, and was 15-25% greater in individuals 65 years of age and over.

The authors say that more aggressive treatment during recent decades may explain these results, including more intensive control of blood sugar in people with diabetes, and blood pressure control and statins to reduce the risk of cardiovascular events in people both with and without diabetes. A shift towards more diabetes screening and earlier diagnosis in recent years may also have contributed to lower mortality rates within more contemporary diabetes populations.

Although not a primary focus of this study, the authors say it should be noted that the prevalence of diabetes was considerably higher in the

Ontario cohort than in THIN during the study period. The reasons for this discrepancy are unclear, but may be related to differences in factors known to influence the incidence of diabetes such as screening programmes, ethnicity, eating habits or physical activity patterns between the two cohorts. Further research would be needed to explore these possibilities.

The authors conclude: "The excess risk of age-standardised mortality in patients with versus without diabetes has decreased over time in both Canada and the UK, having fallen to an increased risk of 50-65% in 2009. The excess risk related to diabetes however varies by age:70%-80% in individuals 20-44 years of age, approximately double in those aged 45-64 years, and 15%-25% greater in individuals above age 65 years and over."

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