

New studies reveal large gap in life expectancy between patients with type 1 diabetes and the general population

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Two new studies published in *Diabetologia* (the journal of the European Association for the Study of Diabetes) show there has been no decrease in the gap in life expectancy between people living with type 1 diabetes (T1D) and the general population over the past few decades.

In the first study, Associate Professor Dianna Magliano and Dr Lili Huo (Baker IDI Heart and Diabetes Institute, Melbourne, Australia) and colleagues examined the [life expectancy](#) of type 1 [diabetic patients](#) in Australia from 1997 to 2010. A total of 5,981 deaths were identified during the 902,136 person-years of follow-up. During these years patients with T1D had an estimated life expectancy at birth of 68.6 years, which was 12.2 years less than the [general population](#) (11.6 years less for men and 12.5 years less for women).

Although life expectancy in 2004-2010 improved for patients with T1D compared with 1997-2003, very similar improvements were also seen in the general population, thus showing the gap between patients with T1D and the general population was not closing during this period. Deaths at age under 60 years accounted for 60% of the years of life lost from T1D for men and 45% for women. The major contribution to years of life lost (YLL) was mortality from endocrine and metabolic disease at age 10-39 years (men, 39-59%; women, 35-50%) and from circulatory disease at age 40 years and over (men, 43-75%; women, 34-75%).

The authors say: "As this is a contemporary nationwide registry-based cohort study of type 1 diabetes, the results are likely to be applicable to other similar Western countries."

They add: "Early onset of diabetes tended to be a predictor of premature mortality. Deaths from circulatory disease and endocrine and metabolic disease contributed most to early mortality in type 1 diabetes. For improvements in life expectancy, greater attention must therefore be paid to both the acute metabolic and chronic cardiovascular complications of type 1 diabetes. A failure to address either one will continue to leave type 1 diabetic patients at risk of premature mortality."

In the second study, Dr Dennis Petrie, University of Melbourne, Carlton, Melbourne, Australia, and Professor Björn Eliasson, University of Gothenburg, Sweden, and colleagues used health records from the Swedish National Diabetes Register (NDR) linked with [death](#) records to explore the life expectancy of Swedes with T1D. There were 27,841 persons aged 20 years and older identified in the NDR as living with type 1 diabetes between 2002 and 2011, contributing 194,685 person-years of follow-up and 2,018 deaths. For men with type 1 diabetes, the remaining LE at age 20 increased significantly by about 2 years (from 47.7 in 2002-06 to 49.7 years in 2007-11). For women with type 1 diabetes there was no significant change, with an LE at age 20 of 51.7 years in 2002-06 and 51.9 years in 2007-11. Cardiovascular mortality did significantly reduce for both men and women over the period. For men a similar increase in life expectancy was also seen in the general population, showing that, as in Australia, the life expectancy gap between patients with T1D and the general population has not changed over this time frame, remaining at approximately 11 years for men and 12 years for women.

The authors conclude: "There is still some way to go in terms of improvement in care for those with type 1 diabetes in order to close the

gap with the general population. A significant proportion have elevated HbA1c levels and a recent paper based on the Swedish NDR highlighted the stark differences in mortality for those with well-controlled vs poorly controlled HbA1c. In addition,

with 10% of men and 13% of women with T1D still current smokers in 2011, additional smoking cessation programmes could generate further improvements. While there have been large increases in the use of lipid-lowering medication, further expansion could generate additional gains given this population's high underlying cardiovascular disease risk. Future research needs to quantify these likely benefits against the costs of policies which might achieve them. In addition, further research might also usefully provide individual specific life expectancy estimates based on an individual's characteristics in terms of their age at diagnosis, and risk factor and comorbidity profiles. This would provide useful information for an individual and allow them to better grasp the likely benefits of improving their overall risk."

In a linked Comment covering both studies, Dr Lars Stene, Norwegian Institute of Public Health, Oslo, Norway, says: "It seems that the gap in life expectancy has remained largely unchanged since the turn of the millennium... There have been remarkable increases in life expectancy in the general population of Sweden, Australia and other countries, in part because of a reduction in cardiovascular mortality. Cardiovascular risk management is an integral part of diabetes care, and it is likely that patients with type 1 [diabetes](#) have enjoyed some of the beneficial developments that do not involve blood sugar control alone."

More information: Lili Huo et al. Life expectancy of type 1 diabetic patients during 1997–2010: a national Australian registry-based cohort study, *Diabetologia* (2016). [DOI: 10.1007/s00125-015-3857-4](https://doi.org/10.1007/s00125-015-3857-4)

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