

Diabetes associated with significant increase in risk of hospitalisation, mortality caused by infections: study

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A new study published in *Diabetologia* (the journal of the European Association for the Study of Diabetes [EASD]) finds that individuals

with diabetes are significantly more likely to be hospitalised and have a greater risk of dying from infections, and this elevated risk is more pronounced in younger adults with diabetes and black people.

The research was conducted by Dr. Michael Fang and colleagues at Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, U.S., and analysed whether diabetes is associated with an increased risk of [infection](#)-related hospitalisation and mortality.

Diabetes is widely thought to increase an individual's susceptibility to infection by reducing the effectiveness of the body's immune response. Consistent with this hypothesis, there is an increased likelihood of both common and rare infections in people with diabetes, and more recently the disease has emerged as an important risk factor for adverse outcomes in cases of COVID-19. The authors point out: "From 2000 to 2015 the overall rate of hospitalisation from infections in US adults rose significantly, especially in people with diabetes."

Previous studies have identified an association between diabetes and infection risk, but these have largely focused on small clinical populations and been limited to comparatively short follow-up periods. There has been relatively little research conducted which looked at rates of infection-related outcomes in the general population, in which infection risk in people with diabetes can be compared over many years to the risk for individuals without the disease.

The team used data from the Atherosclerosis Risk in Communities (ARIC) study which recruited 15,792 adults aged 45-64 years from four US communities between 1987 and 1989. Participants underwent initial clinical examinations, medical interviews and lab tests when they joined the study, with seven follow-up visits taking place beginning in 1990-1992 up to the latest in 2018-2019. After excluding participants due to issues such as a lack of suitable information, the researchers were

left with 12,379 individuals in their analytical sample with a mean age of 54.5 years of whom 54.3% were female and 24.7% were black.

Detailed demographic and lifestyle data were also obtained for ARIC participants which included their age, sex, race, location of study centre, health insurance status, household income, and [education level](#) as well as health behaviours such as smoking and alcohol consumption.

Diabetes status was defined as a participant having a fasting glucose level of 7 mmol/l or higher, non-fasting glucose of 11.1 mmol/l or higher, self-reporting a diagnosis of diabetes by their physician, or their use of glucose-lowering medication at the start of the study. The information in the ARIC study enabled the researchers to select only those cases of hospitalisation caused by infection, with a specific focus on diabetes-related infections (respiratory, urinary, foot, gastrointestinal, sepsis and postoperative wound) as secondary outcomes.

During the mean follow-up period of 23.8 years there were 4,229 relevant cases of hospitalisation, giving an overall rate of hospitalisation due to infection of 15.9 cases per 1,000 person-years. Individuals with diabetes were at significantly greater risk of being hospitalised than individuals without the disease (25.4 vs 15.2 per 1,000 person-years).

After adjusting for sociodemographic factors, participants with diabetes had an infection hospitalisation rate 92% higher than non-diabetics, and a mortality rate 72% higher. This association between hospitalisation risk and diabetes was observed in all subgroups but was noticeably stronger for black participants and those under 55 years of age—in both these groups having diabetes was associated with a roughly doubling of risk of hospitalisation for infection and a more than 50% increased mortality risk. The link was also present for nearly every type of infection, with hospitalisation due to foot infection being 6 times more likely to occur in people with diabetes.

The authors say: "Diabetes was independently associated with an increased risk of hospitalisation for infection. This association was observed across most major types of infection and was more pronounced for younger people and Black people. These associations persisted after adjusting for demographic and cardiometabolic risk factors. The increased risk of hospitalisation for infection-associated with diabetes was observed across major types of infections but was especially robust for foot infections."

The team also note: "The risk of infection mortality was increased also for those with diabetes compared with those without diabetes. More comprehensive clinical guidance to improve infection-related preventive measures and early treatment of infection may reduce related morbidity and mortality in people with diabetes."

The authors conclude that infection prevention and management has become especially important due to the COVID-19 pandemic, as well as the general trend of rising rates of [hospitalisation](#) due to infection: two factors which have both disproportionately impacted individuals with [diabetes](#).

More information: Michael Fang et al, Diabetes and the risk of hospitalisation for infection: the Atherosclerosis Risk in Communities (ARIC) study, *Diabetologia* (2021). [DOI: 10.1007/s00125-021-05522-3](https://doi.org/10.1007/s00125-021-05522-3)

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