

Major fall in diabetes-related amputations since the 1990s

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A major new study has found a significant reduction in diabetes-related amputations since the mid-1990s, credited to improvements in diabetes care over this period. The research is published in *Diabetologia* (the journal of the European Association for the Study of Diabetes) and is by Dr Benjamin Rasmussen and Professor Henning Beck-Nielsen, Odense University Hospital Denmark, and colleagues.

Amputations of the lower limbs are one of the most serious and disabling complications of [diabetes](#), and become necessary when the nerve and [blood vessel damage](#) caused by the condition affects the blood supply to the lower limbs, especially the feet. Serious problems with the feet (including ulceration) are a frequent reason for hospitalisation amongst patients who have diabetes.

This new study analysed amputation rates in the Funen region of Denmark (with 0.5 million residents and regarded as representative of both the population of Denmark as a whole and other high-income countries of Europe and the world) during the period 1996-2011. Amputations were identified from the administrative system, diabetes status by linkage with the Danish National Diabetes Register, and mortality and population data were extracted from Statistics Denmark and the Civil Registration System.

The analysis showed major reductions in diabetes-related amputations of various types. The researchers found an annual reduction in below-ankle amputation (BAA) rates among diabetes patients of 10% and the annual

reduction in below-knee amputation (BKA) rates for patients with diabetes was 15%; for above-knee amputations (AKA), the annual rate of reduction for those with diabetes was around 3% but not statistically significant.

Amputation rates unrelated to diabetes (for example, those caused by vascular diseases and ischaemia) remained unchanged over this period. Despite the reductions in amputation rates for people with diabetes, they remained far more likely to have an amputation than those without diabetes. During the period 1996-2011, a total of 2,832 amputations were performed of which 1,285 were among patients with diabetes and 1,547 among individuals without diabetes. Diabetes patients had an 11-times increased rate of BAA relative to persons without diabetes. For BKA, there was an approximately 7-times increased rate, and for AKA there was a four-times increased rate.

The authors believe that better care related to diabetes and its complications, such as improved drugs and inspection and self-care of foot ulcers (that can get worse until they require amputation), are the central cause of the reduced amputation rates.

They say: "Our study suggests that the reduction in amputation rates among [diabetes patients](#) most likely is due to improvement in the care of individuals with diabetes. The introduction of vascular surgery and improved surgical techniques cannot explain our findings, since these procedures are applied equally in individuals with and without diabetes. The findings in individuals with diabetes can therefore only be explained by improved [diabetes care](#), namely improved metabolic control through drugs or lifestyle, or changes in how care is delivered, including better screening - we believe it to be both."

The authors conclude: "The reduction of amputations among diabetics is encouraging. The results presented here indicate that multidisciplinary

diabetic clinics optimised for screening and treating complications linked to diabetes are beneficial. It is encouraging that the overall amputation rate is declining in most parts of the world. However, amputation rates in patients with diabetes remain high compared to individuals without DM posing a great challenge to improve care."

To reduce the amputation rate further, the authors suggest "a focus on establishing multidisciplinary diabetic clinics highly specialised in the diagnosis and treatment of the underlying macro- and microvascular diseases; diabetic foot ulcer clinics have an important role within these clinics".

More information: Benjamin S. B. Rasmussen et al. Substantial reduction in the number of amputations among patients with diabetes: a cohort study over 16 years, *Diabetologia* (2015). [DOI: 10.1007/s00125-015-3781-7](https://doi.org/10.1007/s00125-015-3781-7)

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