

# Non-steroidal anti-inflammatory drugs linked with heart failure in patients with diabetes

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Short-term use of non-steroidal anti-inflammatory drugs (NSAIDs) is associated with a first-time hospitalization for heart failure in patients with type 2 diabetes, according to research presented at ESC Congress

2022.

"In our study, approximately one in six patients with type 2 [diabetes](#) claimed at least one NSAID prescription within one year," said first author Dr. Anders Holt of Copenhagen University Hospital, Denmark. "In general, we always recommend that patients consult their doctor before starting a new medication, and with results from this study we hope to help doctors mitigate risk if prescribing NSAIDs.

NSAID use has previously been associated with an increased risk of [heart failure](#) in the [general population](#) but data are lacking in patients with type 2 diabetes. Given that patients with type 2 diabetes have over twice the likelihood of developing [heart](#) failure as those without diabetes, NSAIDs could be even more detrimental in this at-risk group.

This study investigated the association between short-term NSAID use and the risk of first-time heart failure hospitalization in a nationwide cohort of patients with type 2 diabetes. The researchers used Danish registers to identify patients diagnosed with type 2 diabetes during 1998 to 2021. Patients with heart failure or a rheumatological condition requiring long-term NSAID use were excluded. Information was collected on prescriptions for oral NSAIDs (celecoxib, diclofenac, ibuprofen, and naproxen) claimed prior to first-time heart failure hospitalization. Using a case-crossover design in which each patient acted as his or her own control, associations between short-term NSAID use and the risk of first-time heart failure hospitalization were assessed.

The study included 331,189 patients with type 2 diabetes. The average age was 62 years and 44% were women. During the first year after inclusion in the study, 16% of patients claimed at least one NSAID prescription while 3% claimed at least three prescriptions. Ibuprofen was used by 12.2% of patients, diclofenac by 3.3%, naproxen by 0.9%, and celecoxib by 0.4%. During a median follow up of 5.85 years, 23,308

patients were hospitalized with heart failure for the first time.

NSAID use was associated with an elevated risk of first-time heart failure hospitalization, with an odds ratio (OR) of 1.43 (95% confidence interval [CI] 1.27–1.63). When individual NSAIDs were analyzed separately, the risk of heart failure hospitalization was increased following the use of diclofenac or ibuprofen, with corresponding ORs of 1.48 (95% CI 1.10–2.00) and 1.46 (95% CI 1.26–1.69), respectively. Celecoxib and naproxen were not associated with an increased risk, potentially due to the small proportion of claimed prescriptions.

The researchers also analyzed the risk of heart failure with NSAID use in subgroups of patients. No association was found in patients with normal glycated hemoglobin (HbA1c) levels (below 48 mmol/mol), which indicates well-controlled diabetes. Strong associations were found in patients above 65 years of age, while no association was found in those below 65 years of age. The strongest association was found in very infrequent or new users of NSAIDs.

Dr. Holt noted that data on over-the-counter use of NSAIDs were not included in the study. But he said: "This was a limitation but likely had no impact on the results since a previous report found that over-the-counter NSAIDs comprise a small proportion of total use."

He concluded: "This was an observational study and we cannot conclude that NSAIDs cause heart failure in patients with type 2 diabetes. However, the results suggest that a potential increased risk of heart failure should be taken into account when considering the use of these medications. On the contrary, the data indicate that it may be safe to prescribe short-term NSAIDs for [patients](#) below 65 years of age and those with well-controlled diabetes."

**More information:** The abstract "Risk of heart failure following short-

term non-steroidal anti-inflammatory drug use in patients with type 2 diabetes mellitus" will be presented by Jarl Strange during the session [Chronic heart failure and diabetes](#) on Friday 26 August at 10:15 to 11:00 CEST at Station 3.

Provided by European Society of Cardiology

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