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## PAPER OF THE MONTH • JULY 2012



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# BMJ

## The use of pioglitazone and the risk of bladder cancer in people with type 2 diabetes: nested case-control study

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**Objective** To determine if the use of pioglitazone is associated with an increased risk of incident bladder cancer in people with type 2 diabetes.

**Design** Retrospective cohort study using a nested case-control analysis.

**Setting** Over 600 general practices in the United Kingdom contributing to the general practice research database.

**Participants** The cohort consisted of people with type 2 diabetes who were newly treated with oral hypoglycaemic agents between 1 January 1988 and 31 December 2009. All incident cases of bladder cancer occurring during follow-up were identified and matched to up to 20 controls on year of birth, year of cohort entry, sex, and duration of follow-up. Exposure was defined as ever use of pioglitazone, along with measures of duration and cumulative dosage.

**Main outcome measure** Risk of incident bladder cancer associated with use of pioglitazone.

**Results** The cohort included 115 727 new users of oral hypoglycaemic agents, with 470 patients diagnosed as having bladder cancer during follow-up (rate 89.4 per 100 000 person years). The 376 cases of bladder cancer that were diagnosed beyond one year of follow-up were matched to 6699 controls. Overall, ever use of pioglitazone was associated with an increased rate of bladder cancer (rate ratio 1.83, 95% confidence interval 1.10 to 3.05). The rate increased as a function of duration of use, with the highest rate observed in patients exposed for more than 24 months (1.99, 1.14 to 3.45) and in those with a cumulative dosage greater than 28 000 mg (2.54, 1.05 to 6.14).

**Conclusion** The use of pioglitazone is associated with an increased risk of incident bladder cancer among people with type 2 diabetes.