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## Author's reply

*To the Editor:* While it is interesting to note that Beyan et al. have found yet another variable that correlates (albeit negatively) with the incidence of Type 1 diabetes, I think it is a mistake to confuse the hygiene hypothesis with "personal hygiene" as judged by the use of deodorants, aftershave, etc. The hygiene hypothesis is based on the concept that early exposure to infec-

tious agents is important for education of the immune system, and I am not aware that airborne infection (or for that matter infestation with *Enterobius*) is related in any way to the number of personal care items in a shopping basket.

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## –to: M. Koopmanschap: Coping with Type 2 diabetes: the patient's perspective. *Diabetologia* 45:S18–S22

*To the Editor:* In a recent issue, Koopmanschap [1] reported very interesting and relevant results, confirming the idea that health-related quality of life (HRQoL) is an important issue in Type 2 diabetes. The data of this study was collected in five European countries, within the framework of the Costs of Diabetes in Europe – Type II (CODE-2) study. The core measure was the Euroqol 5 dimensions (EQ-5D) questionnaire. This tool involves patient self-reporting of their health status in five dimensions: mobility, self-care, usual activities, pain and discomfort, anxiety and depression. It is a widely used instrument that was also utilised in the United Kingdom Prospective Diabetes Study (UKPDS) for assessing generic HRQoL.

In the final analyses of this manuscript regarding the results of the CODE-2 study, HRQoL is analysed by treatment type (diet and exercise, oral drugs or insulin). It seemed that those who used insulin had a lower mean level of HRQoL when compared to those who did not use insulin. Furthermore, it was described that treatment type was a predictor of quality of life after adjusting for age, sex and any complications. Based on

these findings, the author concludes: "... the CODE-2 study shows that progression to insulin treatment is independently associated with a reduction in quality of life as is poor glycaemic control and a BMI of more than 27." and "... the implication for policy makers is that an avoidance of insulin therapy and the reduction or prevention of complications is the key to improving patients' HRQoL."

We feel that the data of the CODE-2 study do not permit this conclusion and implications, as the cross-sectional design of this study does not allow for causal inferences. The author states that treatment with insulin is a cause of impaired HRQoL, but different dimensions of HRQoL could also have contributed to the start of insulin therapy. For example, depression (with anxiety one of the five dimensions that is assessed by the EQ-5D) was found to be associated with poor glycaemic control in many studies, probably partly as a result of impaired self-care behaviour [2, 3, 4]. Furthermore, poor glycaemic control is one of the main reasons for physicians to start insulin therapy. Thus, poor HRQoL could also be causally linked to initiation of treatment with insulin.

Moreover, previous studies investigating the relationship between insulin therapy and quality of life in Type 2 diabetes have produced conflicting results. Some prospective studies suggest that the shift from a treatment consisting of exercise and/or tablets to insulin therapy can improve the glycaemic control of patients with Type 2 diabetes, without influencing their quality of life [5, 6] or with even improving it [7]. In contrast, another study [8] has found that introduction of insulin therapy, initially had no effect on the quality of life of patients with Type 2 diabetes. But, they also found that a substantial number of subjects experienced a steady deterioration in glycaemic control during the first few years after insulin therapy,

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