

## **Factors accounting for variability in weight and HbA1c response to exenatide in the Association of British Clinical Diabetologists (ABCD) nationwide exenatide audit**

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**Aims:** To learn from experience of exenatide in real clinical use in the UK, ABCD began a nationwide audit in December 2008.

**Methods:** An on-line questionnaire in a password protected area of the ABCD website for collection of anonymised patient data. UK diabetologists were persistently prompted by email to contribute.

**Results:** The first 3913 patients with data available for analysis were studied - mean (+/- SD) age 54.6 (+/-10.4) years, 2167/3913 (55.4%) male. In response to exenatide mean (+/- SD) HbA1c, weight and body mass index fell as follows: HbA1c by 0.75% from 9.42 (+/- 1.19)% to 8.65 (+/- 1.22)% ( $p < 10^{-126}$ ), weight by 4.9kg from 114(+/- 23.3) to 109.1(+/- 22.6) kg ( $p < 10^{-15}$ ), BMI by 1.74 from 39.89 (+/- 7.5) to 38.15 (+/- 7.24) kg/m<sup>2</sup> ( $p < 10^{-16}$ ). The weight and HbA1c response showed considerable variability; to assess factors accounting for this variability, weight and HbA1c responses were each divided into 5 groupings. 5 weight groupings: weight increase; weight loss of 0-2Kg, 2-5Kg, 5-10Kg and >10Kg respectively. 5 HbA1c groupings: HbA1c rise >1% and 0-1%; HbA1c fall 0-1%, 1-2%, and >2% respectively. These groups were compared by analysis of variance with regard to initial HbA1c, weight, BMI, duration of diabetes, age, sex, insulin usage prior to exenatide and insulin discontinuation at exenatide start. Highly significant differences were found between the groups

- Those whose weight increased after exenatide had higher initial HbA1c, but lower initial weight, BMI and age. They were less likely either to 1) have been on insulin and 2) to have had insulin stopped
- Those who lost a large amount of weight (>10kg) after exenatide had a lower initial HbA1c, higher initial weight and BMI, and slightly longer duration diabetes. They were more likely to 1) have been on insulin 2) to have had insulin stopped.
- Those with the greatest falls in HbA1c after exenatide (>2%) had higher initial HbA1c
- Those who experienced the greatest rise in HbA1c after exenatide (>1%) had a higher initial weight, were also more likely to be on insulin before being started on exenatide; when insulin was stopped at exenatide start, those whose HbA1c rose were more likely to have insulin restarted

### **Conclusion:**

1. Heavier patients with better glycaemic control lose the greatest amounts of weight on exenatide
2. Some poorly controlled patients initially put on weight with exenatide as exenatide improves glycaemic control in patients whose weight has been lowered by poor glycaemic control
3. Strict adherence to the current exenatide license in the UK, with discontinuation of insulin at exenatide start, may lead to considerable worsening of glycaemic control. This is more likely to occur in heavy patients whose diabetes is relatively well controlled by insulin.

**Keyword:** Incretin therapies