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THERAPY

## DISPERSED INSULIN INJECTION

A dispersed injection strategy for delivering insulin aspart to patients with type 1 diabetes mellitus (T1DM) is more effective than a single injection, according to findings published in *Diabetes Care*.

Postprandial hyperglycaemia often occurs in patients with T1DM who use the current insulin delivery system (single injection), which can lead to short-term and long-term diabetic complications. New insulin analogues (such as insulin aspart) have been developed to try to combat this problem, but rates of insulin absorption and action are still not fast enough to avoid postprandial hyperglycaemia. A European team of researchers has now examined whether a dispersed bolus injection (nine needles in a grid, each separated by 1 cm) could improve the absorption rate of insulin aspart.

The researchers first tested how the new injection system affected the surface-to-volume ratio of the injection in an *ex vivo* experiment. 12 abdominal skin flaps were injected with a mixture of insulin aspart and a contrast agent using either the dispersed or the single delivery strategy. Microfocus CT was used to assess how the injected mixture dispersed. As expected, the dispersed strategy was associated with a higher surface-to-volume ratio than the single injection strategy, which indicates that insulin could be absorbed faster with a dispersed method than with a single injection.

A euglycaemic clamp was then used to examine the effects of the two delivery methods in 12 patients with C-peptide-negative T1DM. Each participant underwent administration of insulin aspart through both delivery methods at an interval of 5–21 days. Blood samples were taken at regular intervals to measure glucose levels. The researchers found that the time to reach the maximum glucose infusion rate was reduced with the dispersed injection strategy, which suggests that the onset of insulin action is much faster with this method and more closely mimics physiological insulin profiles than the single injection.

The dispersed method could improve the management of patients with T1DM. However, more work needs to be done to optimize the delivery method so that it is feasible in routine clinical use.

***Claire Greenhill***

**Original article** Mader, J. K. *et al.* Enhanced absorption of insulin aspart as the result of a dispersed injection strategy tested in a randomized trial in type 1 diabetic patients. *Diabetes Care* doi:10.2337/dc12-1319