

Keeping abreast of the latest diabetes research: Intensive treatment, hypoglycaemia and mortality, HIIT, and IVI protocols

Too busy to keep up to date with the latest research? Erwin Castro, a Diabetes Nurse Consultant in Hastings, selects the latest papers of interest to diabetes nurses.

Cost-effectiveness of intensive treatment in the Steno-2 study

Gaede J et al (2019)

[Diabetologia 62: 147–55](#)

Despite a relatively small cohort of 160 people, the Steno-2 study has shown that intensive, multifactorial treatment of type 2 diabetes can significantly improve microvascular, cardiovascular and mortality outcomes up to 20 years later. The treatment and its results are summarised in *Diabetes & Primary Care* [here](#).

This latest analysis looked at the costs associated with the intensive and conventional treatments over the entire study period. Over 21.2 years of follow-up, there was no significant difference in total direct medical costs between the groups; however, the mean cost per person-year was significantly lower in the intensive treatment group (£8725 vs £10091; $P=0.045$). The lower cost was mainly driven by fewer inpatient admissions related to cardiovascular disease ($P=0.0024$).

Considering the substantial health benefits achieved, the authors conclude that intensive, multifactorial intervention in high-risk individuals with type 2 diabetes is highly feasible and cost-effective.

Optimal insulin dose to correct hyperglycaemia after intensive exercise

Aronson R et al (2018) *Diabetes Care*

[19 Nov \[Epub ahead of print\]](#)

This study looked at rebound hyperglycaemia in response to high-intensity interval training (HIIT), and the optimal insulin dose required to normalise blood glucose levels.

Seventeen people with type 1 diabetes performed four weekly HIIT sessions,

each lasting 25 minutes. If hyperglycaemia (>8.0 mmol/L) resulted, they received a bolus insulin correction 15 minutes post-exercise, based on their usual insulin correction factor (ICF), adjusted by one of four multipliers: 0%, 50%, 100%, or 150%.

Overall, 64 out of 71 participants (90%) developed hyperglycaemia at 40 minutes post-exercise, with plasma glucose increasing by approximately 3.8 mmol/L. ICFs multiplied by 100% and 150% had similar effects to each other, but were more effective than a 50% multiplication in reversing hyperglycaemia. Hypoglycaemia was rare.

The authors conclude that, in post-HIIT hyperglycaemia, correction based on a patient's usual ICF is safe and effective. Optimal glucose reduction, with minimal hypoglycaemia, occurred in the 100% and 150% correction arms.

Severe hypoglycaemia associated with excess cardiovascular deaths

Davis SN et al (2018) *Diabetes Care*

[19 Nov \[Epub ahead of print\]](#)

This *post hoc* analysis of the VADT (Veterans Affairs Diabetes Trial) explored the relationship between severe hypoglycaemia (SH) and cardiovascular (CV) and all-cause mortality in 1791 military veterans with long-standing, suboptimally controlled type 2 diabetes, who were randomised to tight or conventional blood glucose targets.

The rate of SH in the intensive treatment group was 10.3 per 100 person-years, versus 3.7 in the standard treatment group ($P<0.001$). SH within the past 3 months was associated with an increased risk of serious CV events, CV mortality and overall mortality. For overall mortality, the risk following SH was higher

in the standard treatment group than in the intensive group. These findings confirm the CV risk associated with SH.

An IV insulin protocol designed for steroid administration in women with GDM reduces the risk of neonatal hypoglycaemia

Rowe CW et al (2018)

[Diabet Med 15 Nov \[Epub ahead of print\]](#)

Steroid administration in women with gestational diabetes (GDM) causes maternal hyperglycaemia and is associated with neonatal hypoglycaemia. However, there is no validated protocol to stabilise glycaemia and mitigate these risks. This study sought to validate an intravenous insulin (IVI) protocol to achieve pregnancy-specific glycaemic targets, compared with a generic adult IVI protocol.

The pregnancy-specific IVI protocol is described in the article but, in summary, involved insulin prescription at the time of steroid administration, rather than in response to hyperglycaemia, and with more aggressive IVI rates if required. It was also designed to be led by the midwife according to a specific algorithm, without need for medical officer review.

The records of 151 pregnant women with GDM who received antenatal betamethasone and received either the pregnancy-specific IVI protocol ($n=65$) or the generic protocol ($n=86$) were reviewed.

The pregnancy-specific protocol achieved more time in the target glucose range (3.8–7.0 mmol/L; 68% vs 55%), as well as lower rates of critical maternal hyperglycaemia (0% vs 2%), maternal hypoglycaemia (2% vs 12%) and neonatal hypoglycaemia (29% vs 54%) compared with the standard protocol. ■