Perioperative glucose control for patients with diabetes

Review question
What are the effects of perioperative glycaemic control for patients with diabetes undergoing surgery?

Nursing implications
Patients with diabetes are at increased risk of complications after surgery compared with patients without diabetes. Glucose control has become a mainstay of many perioperative areas across the country. However, the level of glucose control needed has been questioned over the last few years, causing the need for a systematic review.

Intensive glucose control requires increased nursing resources to monitor patients’ blood glucose frequently. The timely recognition and treatment of hypoglycaemia signs and symptoms is essential when implementing intensive glucose control.

Study characteristics
The Cochrane systematic review included 12 randomised controlled trials (RCTs) containing a total of 1,403 participants. Participants were patients of any age, sex or ethnicity, with previously diagnosed type 1 or 2 diabetes who needed perioperative glycaemic control.

The intervention was intensive glycaemic control as proposed by the authors. The control group received standard or conventional glucose control. The primary outcomes measured were mortality, hypoglycaemia and infectious complications. Secondary outcomes included risk of cardiovascular complications, renal failure, length of intensive care unit and hospital stay, health-related quality of life, economic costs, weight gain, and mean blood glucose during intervention.

In terms of methodological quality, six studies performed adequate sequence generation and four performed adequate allocation concealment. Blinding of participants was not possible due to the nature of the intervention and five of the trials included blinding of the outcome assessor. Random-effects meta-analysis was carried out where possible and a summary of the evidence was presented.

Summary of key evidence
Results indicated that there were no significant differences between intervention and control groups for the following outcomes: death from any cause (11 trials; 1,365 participants); infectious complications (11 trials; 1,367 participants); cardiovascular events (seven trials; 806 participants); and renal failure (seven trials; 870 participants).

Regarding hypoglycaemic episodes (1,131 participants in 11 trials) 14.5% of patients had a hypoglycaemic event in the tight glycaemic group and 5.4% had a hypoglycaemic event in the control/conventional group.

On the basis of a post-hoc analysis, there is a suggestion that intensive glycaemic control may increase the risk of hypoglycaemic episodes if longer-term outcome measures are analysed (three trials; 724 participants). This result must be interpreted with caution.

Results for length of intensive care unit and hospital stay (nine studies for each) showed considerable heterogeneity and no solid results could be generated.

Best practice recommendations
The use of perioperative intensive glucose control in patients with diabetes has no benefit for infection and mortality compared with conventional blood glucose control. Additionally, the use of perioperative intensive glucose control for patients with diabetes may increase the risk of hypoglycaemia, as demonstrated in a post-hoc analysis. Therefore, use of perioperative intensive glucose control should not be routinely used. Further research is needed to ascertain what, if any, perioperative glucose control would result in improved outcomes for patients with diabetes.

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Reference