



In reply: Regarding the survey on perioperative diabetes medications and glucose control

Russell Brown, MDCM, PhD, FRCPC · Urooj Siddiqui, MD · James Paul, MD, MSc, FRCPC

Received: 30 May 2019/Revised: 30 May 2019/Accepted: 3 June 2019/Published online: 7 June 2019
© Canadian Anesthesiologists' Society 2019

To the Editor,

We appreciate and share the enthusiasm expressed by the constructive comments¹ in response to our recent survey surrounding the perioperative management of glucose control.²

We agree entirely with the points raised surrounding the limited, yet supporting, evidence for the perioperative continuation of dipeptidyl peptidase-4 inhibitors. We believe that the larger barrier remains educating perioperative team members, including anesthesiologists, of the benefits for the routine adoption of continuing oral glucose-lowering medications perioperatively. It has previously been estimated to take 15 years for treatments to be adopted as routine care after the provision of clear evidence.³ The advent of enhanced recovery after surgery (ERAS) protocols represented a major paradigm shift that accelerated the translation of best practices into routine surgical care.³ Perhaps one way this might be overcome is if future ERAS renditions considered the benefits of continuing oral glucose-lowering medications around the time of surgery.

It remains to be established what is the better marker for perioperative glycemic control. Although hemoglobin A1c (HbA1c) does provide a measure of glycemic control over a period of months and might also be predictive for outcomes in surgical patients,⁴ it is also of limited utility in

patients with anemia and liver and renal disease, or in patients who have recently received a blood transfusion.⁵ Conversely, random glucose levels are easier to obtain with point-of-care devices, and may provide insight into acute variability that likely reflects neurohormonal changes associated with significant endothelial dysfunction and oxidative stress.⁵ For example, the GlucoVISION study found that random glucose values greater than 6.86 mmol·L⁻¹ in patients without diabetes, or more than 7.92 mmol·L⁻¹ in patients with diabetes, predicted major postoperative cardiovascular events.⁵ Perhaps the best measure of perioperative glycemic control is to consider random glucose values in the context of HbA1c.

We suspect that the poor response rate to our survey likely reflects the lower priority that current practices place on glycemic control in non-cardiac surgery patients. Nevertheless, as evidence continues to emerge highlighting the predictive value of glucose measures and glycemic control, we will ideally see an increased emphasis of its importance to improve surgical patient care.

Conflicts of interest None declared.

Editorial Responsibility This submission was handled by Dr. Hilary P. Grocott, Editor-in-Chief, *Canadian Journal of Anesthesia*.

R. Brown, MDCM, PhD, FRCPC (✉) · J. Paul, MD, MSc, FRCPC
Department of Anesthesia, McMaster University, Hamilton, ON, Canada
e-mail: Russell.brown@medportal.ca

U. Siddiqui, MD
Department of Anesthesiology, University of Saskatchewan, Saskatchewan, SK, Canada

References

1. M.S. R. Regarding the survey on perioperative diabetes medications and glucose control. *Can J Anesth* 2020; 67; DOI: <https://doi.org/10.1007/s12630-019-01424-6>.
2. Brown R, Siddiqui U, Paul J. A survey: perioperative diabetes medications and glucose control-time to re-examine management? *Can J Anesth* 2019; 66: 621-2.

3. *Ljungqvist O, Scott M, Fearon KC*. Enhanced recovery after surgery: a review. *JAMA Surg* 2017; 152: 292-8.
4. *Goodenough CJ, Liang MK, Nguyen MT, et al*. Preoperative glycosylated hemoglobin and postoperative glucose together predict major complications after abdominal surgery. *J Am Coll Surg* 2015; 221(854–61): e1.
5. *Punthakee Z, Iglesias PP, Alonso-Coello P, et al*. Association of preoperative glucose concentration with myocardial injury and

death after non-cardiac surgery (GlucoVISION): a prospective cohort study. *Lancet Diabetes Endocrinol* 2018; 6: 790-7.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.