



The sweet and sour of bariatric surgery – Identifying the incidence of post-operative diabetic ketoacidosis at the Royal Brisbane and Women's Hospital

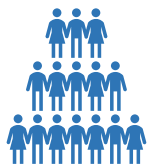
Abby Yu¹, Gemma Woodruff¹, Nicolas Anning¹, Emily Zhou². 1 RBWH Pharmacy Dept 2. Queensland University of Technology

Purpose:

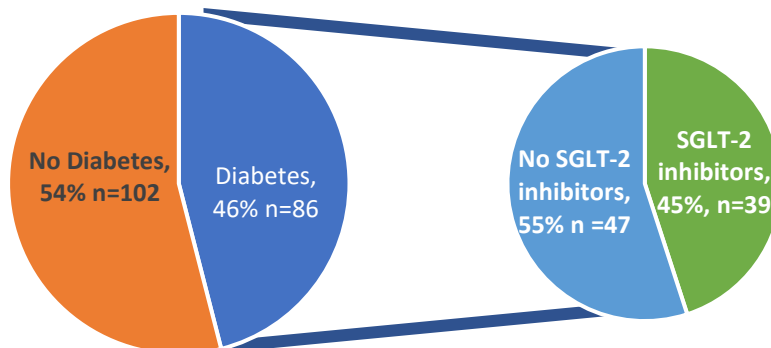
Bariatric surgery has become increasingly common in managing severe obesity in the Australian population. Patients undergoing bariatric surgery are required to follow a Very Low Energy Diet (VLED), commencing 4 weeks before surgery. Published case reports have highlighted the risk of diabetic ketoacidosis (DKA) after bariatric surgery, with possible precipitants including reduced oral intake, omission of insulin, and combination of VLED and sodium glucose co-transporter (SGLT-2) inhibitor use. The Australia Diabetes Society (ADS) advises to presume diabetic ketoacidosis if ketones are $> 1.0\text{mmol/L}$ and base excess is less than -5mmol/L . It defines euglycaemic DKA as presence of the above with blood glucose levels $< 14\text{mmol/L}$. An audit was conducted to determine the incidence of ketosis with or without clinically diagnosed DKA in patients who have undergone bariatric surgery at the Royal Brisbane and Women's Hospital (RBWH).

Methods: Ethics exemption was obtained from the RBWH Ethics Committee. Medical records of 188 patients who had bariatric surgery at the RBWH between 1 January 2020 and 30 April 2021 were retrospectively reviewed. Data captured included patient demographics; type of surgery; diabetes status; SGLT-2 inhibitor use and the time interval it was withheld before surgery; perioperative blood glucose and ketone levels and clinical diagnosis of DKA within 30 days of surgery.

Results



Of the **188** patients audited



- All SGLT-2 inhibitors were ceased at least 2 days prior to surgery (≥ 72 hours before surgery) as per ADS recommendations.



- 9 Patients (4.8%) had blood ketones checked in the perioperative period
- 7 Patients had elevated ketones $> 1.0\text{mmol/L}$ (range = 1.9-6.6)
- 6 Of whom were taking SGLT-2 inhibitors



2 patients developed **euglycaemic DKA** in the perioperative period, both had been on **SGLT-2 inhibitors**.

Conclusions: There is a small but significant risk of DKA in patients who are undergoing bariatric surgery, particularly in those who have been treated with a SGLT-2 inhibitor. Currently blood ketones levels are not routinely monitored on inpatient wards unless $\text{BGL} > 16\text{mmol/L}$ as per alerts on the National subcutaneous insulin chart. However, increased monitoring of blood ketones levels in bariatric surgery patients who have been treated with SGLT-2 inhibitors is warranted, given the risk of euglycaemic DKA even when these agents have been ceased appropriately prior to surgery.