Perioperative management of diabetes in major surgery in Gloucester Royal Hospital

Dr Alice Bevan, Dr Jeanie Worthington, Dr Henry Murdoch

Background

Optimal peri-operative management of glucose control in diabetic patients is essential. Gloucester Royal Hospital (GRH) has collected data on patients undergoing major surgery as part of Peri-operative Quality Improvement Programme (PQIP) since 2018.

Diabetes management has been identified as an area for improvement.

Key indicators include measuring HbA1c on all diabetic patients before major elective surgery and consider postponing non-urgent surgery if HbA1c >69 mmol/mol[1,2].

Other recommendations include measuring blood glucose regularly and aiming for blood glucose levels of 6-12 mmol/l throughout surgery[1,2].

Methodology

The GRH PQIP database was reviewed after 6 months of recruitment to identify patients with Type 1 or Type 2 diabetes.

The peri-operative management of diabetes was audited against key indicators to identify areas for improvement.

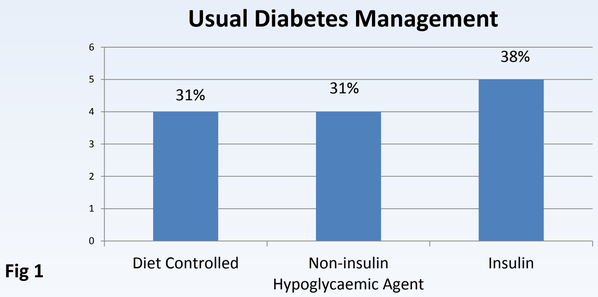

Fig 1

Criteria and Standard

The trust guidelines and PQIP recommendations were reviewed and the following standard set:

- Patients to have HbA1c measured before major elective surgery
- Postponing non-urgent surgery to be considered if HbA1c >69 mmol/mol
- Capillary blood glucose (CBG) to be measured on admission
- CBG to be measured hourly in the perioperative period
- Blood glucose levels to be kept at 6-12 mmol/l throughout surgery
- Variable rate insulin infusions (VRII) to be used if blood glucose >12 mmol/l I

A standard of 100% was agreed.

Results

We identified 14 patients with diabetes out of a database of 86 cases (16%). All cases were elective, from September 2018 – February 2019.

Of the 14 cases, 5 were treated with insulin, 5 with non-insulin hypoglycaemic agents and 4 were diet controlled.

None of the standards were met.

- 71% had an HbA1c measured, and in 29% the HbA1c was >69 mmol/mol
- Out of the 4 cases with an HbA1c >69 mmol/mol, 3 were not delayed due to surgical urgency.
- 71% had a CBG measured on admission.
- 43% had a VRII appropriately commenced when CBG>12 mmol/L.
- 29% maintained CBG between 4-12 in the perioperative period.
- None recorded hourly perioperative CBGs.

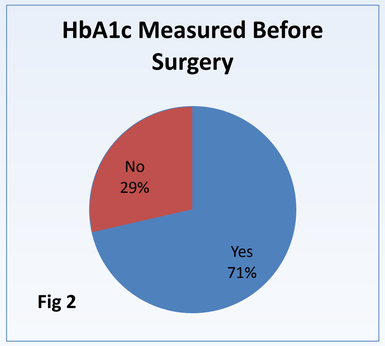

Fig 2

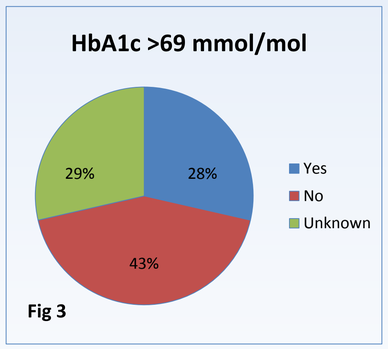

Fig 3

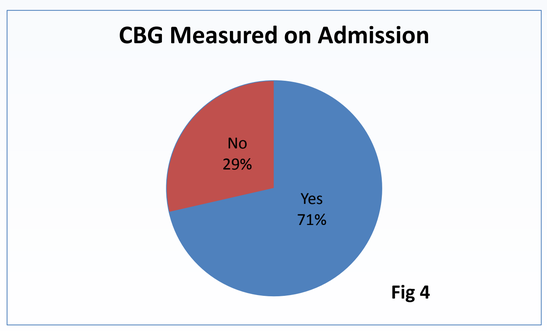

Fig 4

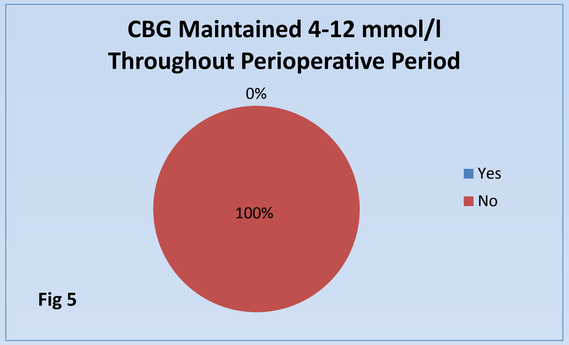

Fig 5

Conclusion

Our results have identified intraoperative measurement and documentation of CBG requires significant improvement.

No cases recorded hourly peri-operative glucose measurement. Several cases had no documentation at all throughout surgery.

We also identified not all patients had an HbA1c measured. Comparing our data with the national PQIP data, GRH has a higher proportion of diabetic patients (16% vs 13%) and those with an elevated HbA1c (29% vs 20%).

Recommendations

In order to improve practice, we introduced the following:

- Preoperative assessment nurse training sessions
- We are establishing a nurse champion to assist with diabetic queries preoperatively
- High risk cases are to be referred for post-op diabetic nurse follow up
- We are forming a joint working group with diabetic liaison nurses to update the current pathway to identify high risk patients, and to assess impact of new insulin regimes and pumps.

References

1. PQIP Annual Report, 2017-2018. https://pqip.org.uk/FilesUploaded/PQIP%20Annual%20Report%202017-18.pdf (accessed 03/04/19)
2. AAGBI Guidelines: Peri-operative management of the surgical patient with diabetes 2015. https://anaesthetists.org/Portals/0/PDFs/Guidelines%20PDFs/Guideline_perioperative_management_surgical_patient_diabetes_2015_final.pdf?ver=2018-07-11-163756-413&ver=2018-07-11-163756-413 (accessed 03/04/19)