Clinical Audit: Preoperative Ordering of HbA$_{1C}$ in Upper Gastrointestinal and Endocrine Surgical Patients in a Melbourne tertiary level hospital

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Background:

Diabetes is an important contributor to the overall burden of disease in Australia[1]. Diabetes and higher HbA$_{1C}$ are independently associated with a higher risk of adverse outcomes after surgery[2,3].

The International Expert Committee recommends a diagnosis of diabetes be made if the HbA$_{1C}$ level is ≥6.5%[4]. Appropriate identification of patients who have diabetes (diagnosed or previously undiagnosed) has obvious implications for the quality of care provided to patients in the perioperative setting.

A clinical audit guideline published by ANZCA recommends all patients undergoing major elective surgery should, if possible, have their HbA$_{1C}$ tested preoperatively[5]. This recommendation is in line with local policy at Austin Hospital.

Austin Health utilises an automated system to screen for diabetes in at-risk inpatients on an opportunistic basis[6]. The criteria for inclusion in this rule is outlined in Table 1. All patients who fulfil criteria have a request for an HbA1C automatically created by Cerner®.

Criteria for inclusion in automated Cerner® rule
Age ≥ 54 years
Inpatient stay > 24 hours
Not had an HbA1C ordered within past three months

Table 1: Automated rule for ordering of HbA1C which operates at Austin Hospital

Methods:

We performed a retrospective clinical audit project to establish compliance of our institution to the aforementioned recommendation for preoperative HbA$_{1C}$ testing.

All patients undergoing elective major surgery (defined as requiring ≥2 night stay) under the Upper Gastrointestinal and Endocrine Surgical Unit were audited for the 2016/17 financial year. Austin Health utilises Cerner® electronic medical records that allows comprehensive electronic data capture and access to patient health information in the perioperative setting.
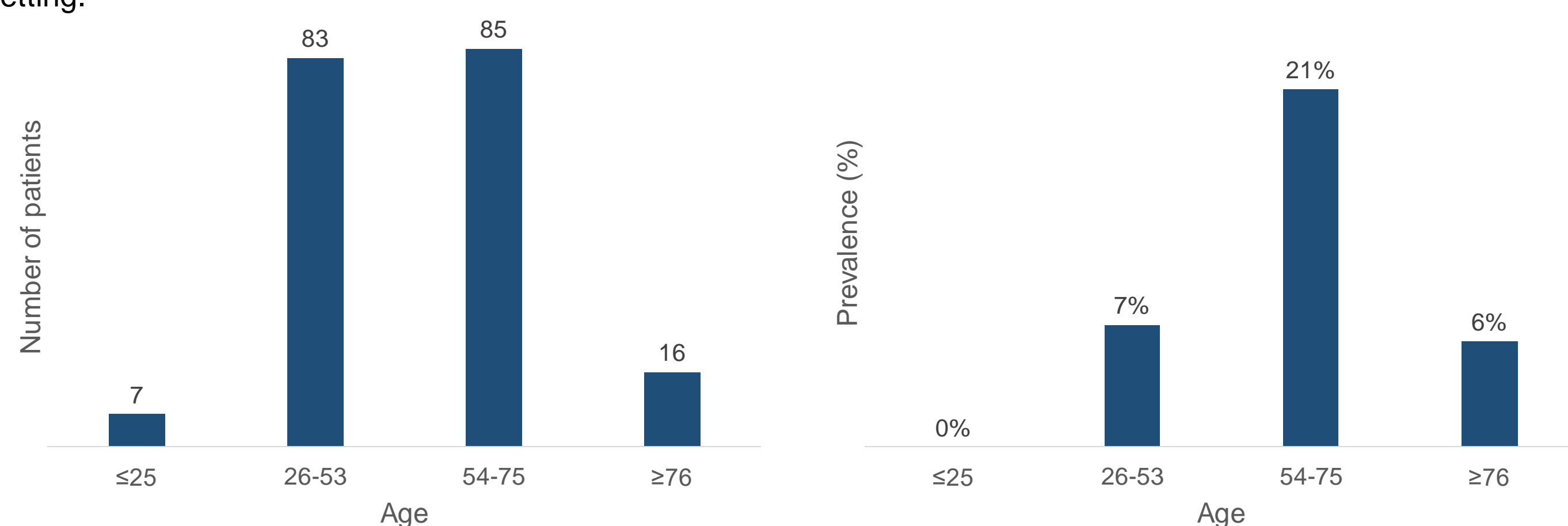
Figure 1: Age distribution within audit population (n = 191)
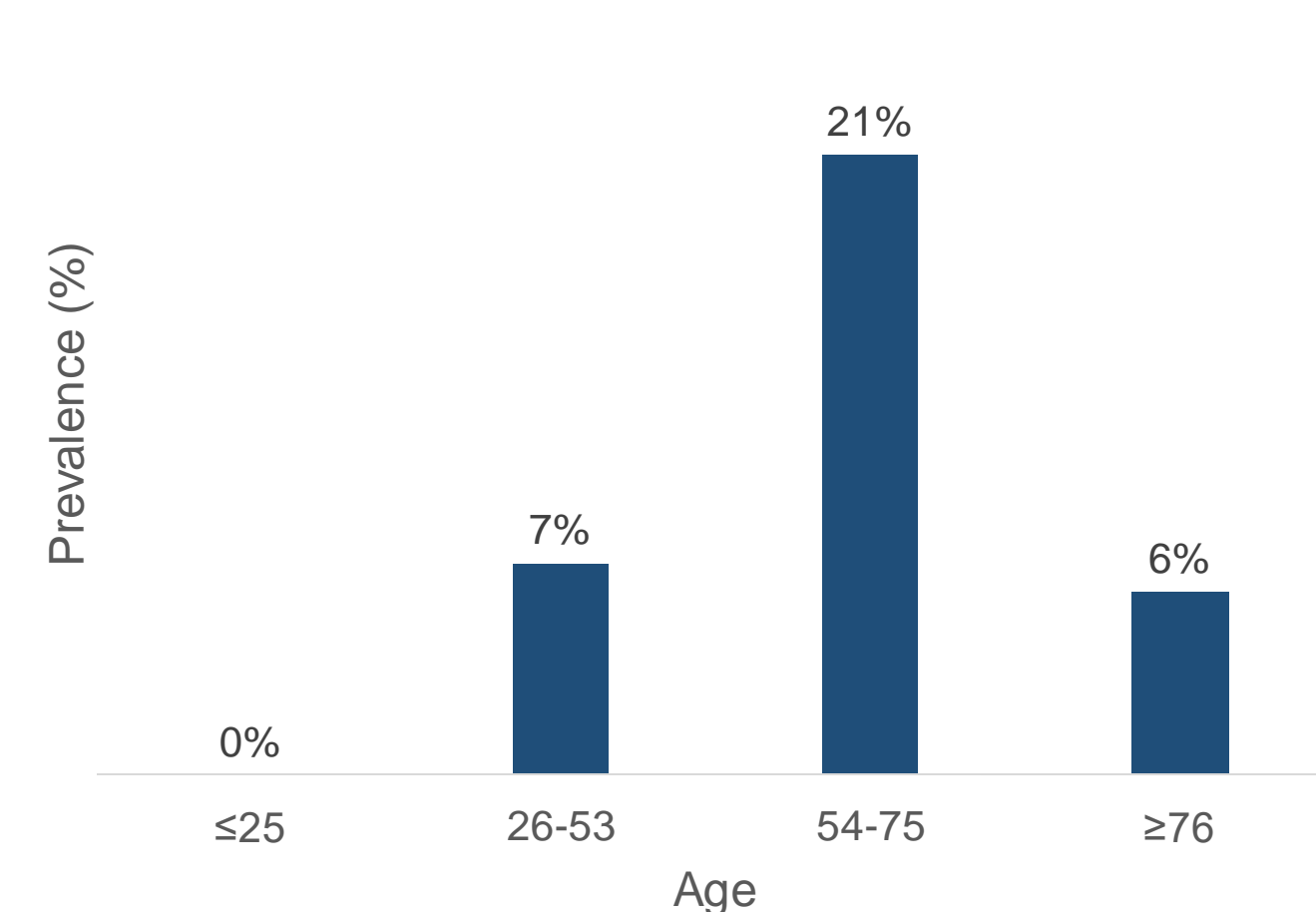
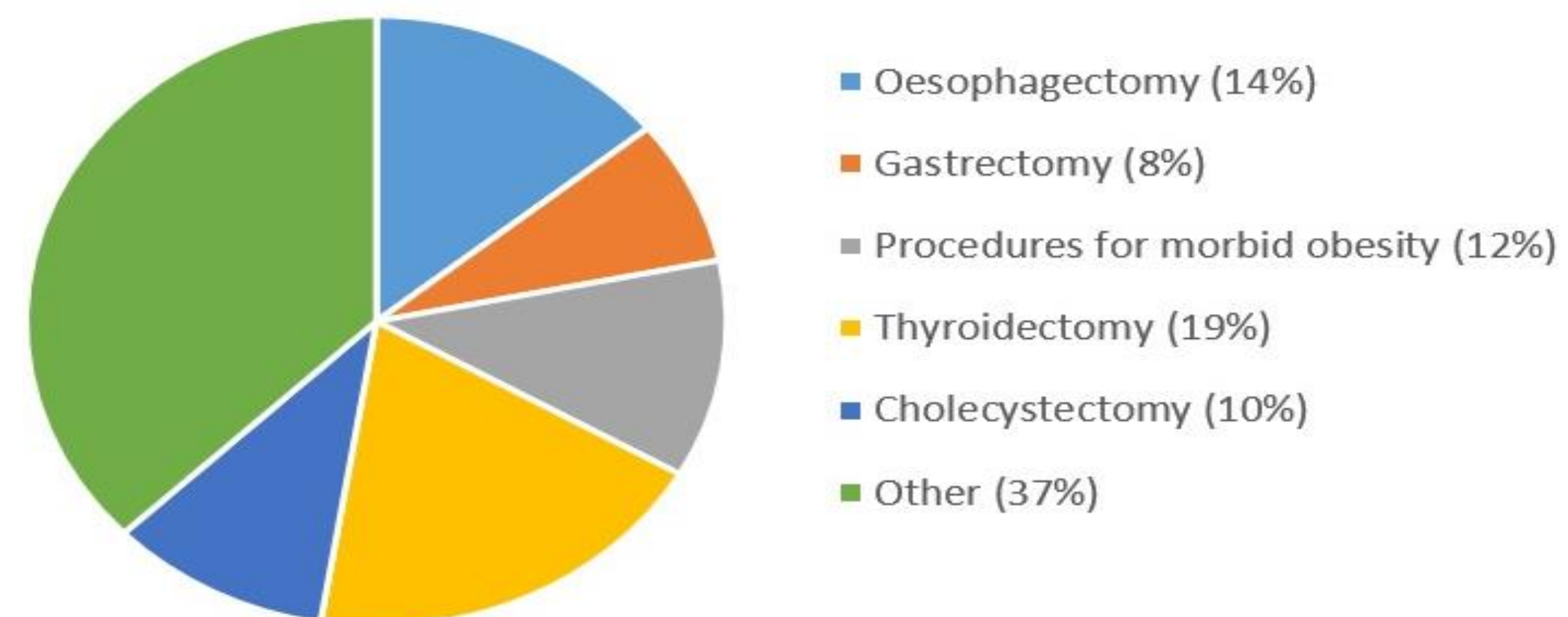**Figure 2**: Prevalence of diabetes within audit population

Results:

We collected data from 191 consecutive patients. Distribution of age and prevalence of diabetes within our audit population is illustrated graphically in Figures 1 and 2.

- Of these patients, 25 (18%) had diabetes based on HbA$_{1C}$ testing.
- 113 (59%) had a preoperative HbA$_{1C}$ checked.

Of the 78 patients who were not checked, 33 patients had their HbA$_{1C}$ ordered in the immediate postoperative period as part of the automated Cerner® rule.

- Of this group of 33 patients, 6 (18%) returned an HbA$_{1C}$ result of ≥6.5%.
- Breakdown by surgery type in those 78 patients not checked for HbA$_{1C}$ preoperatively is summarised graphically in Figure 3.

- Oesophagectomy (14%)
- Gastrectomy (8%)
- Procedures for morbid obesity (12%)
- Thyroidectomy (19%)
- Cholecystectomy (10%)
- Other (37%)

Figure 3: Breakdown by surgery type in patients not checked for HbA1C preoperatively

Conclusion:

- 41% of patients undergoing major elective surgery did not have HbA$_{1C}$ checked preoperatively.

- A small percentage within this patient group proceeded to major surgery with undiagnosed diabetes.

- Further education and more reliable mechanisms for checking HbA$_{1C}$ preoperatively may help to improve outcomes for diabetic patients.

- Implementation of an automated system for the ordering of preoperative HbA$_{1C}$ in surgical patients may increase adherence to current recommendations and would likely be applicable to many healthcare services across Australia.

References
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Austin Health