

## Baseline postoperative nausea and vomiting management following bariatric surgery, prior to EMR-embedded decision support

Annie Ea<sup>1</sup>, Krista Siason<sup>1</sup>, Susan Poole<sup>1</sup>, Paul Burton<sup>2</sup>, Wendy Brown<sup>2</sup>, Lauren Hunt<sup>1</sup>

1. Pharmacy Department, Alfred Health, Melbourne, VIC. 2. Oesophago-Gastric and Bariatric Surgery Unit, Alfred Health, Melbourne VIC

### Background

- Bariatric surgery is associated with a high risk of post-operative nausea and vomiting (PONV); defined by an episode of nausea, vomiting or retching in the post-operative period.<sup>1-3</sup> The rate of PONV following bariatric surgery is double the rate compared to general surgery.<sup>1</sup>
- PONV is associated with adverse sequelae including profound patient discomfort, prolonged recovery time, dehydration and electrolyte imbalances. It prolongs hospital stay and is identified as the most common reason for unplanned readmissions post-bariatric surgery.<sup>1,2,4</sup>
- The management of PONV post-bariatric surgery is complex and requires adoption of processes to optimise use of intraoperative and post-operative antiemetics.<sup>1,2</sup>
- Reviewing baseline PONV episodes and relationship to antiemetic prescribing practices will highlight key areas where standardisation of practice may improve patient outcomes and reduce the incidence of PONV.

### Aim

To evaluate the incidence of PONV following bariatric surgery. This data will serve as baseline to assess the impact of standardising practice through electronic medical record (EMR)-embedded decision support.

### Methods

A retrospective review of patients undergoing bariatric surgery between May 2019 and June 2020 was performed. A fully digital medication prescribing and administration system was in place and data was sourced from the EMR including baseline demographics, PONV therapy and events. Risk of PONV was assessed using the Apfel score. Use of multimodal therapy (>2 antiemetic classes) and incidence of PONV on post-operative day (POD) 0, 1, 2 and 3 were evaluated.

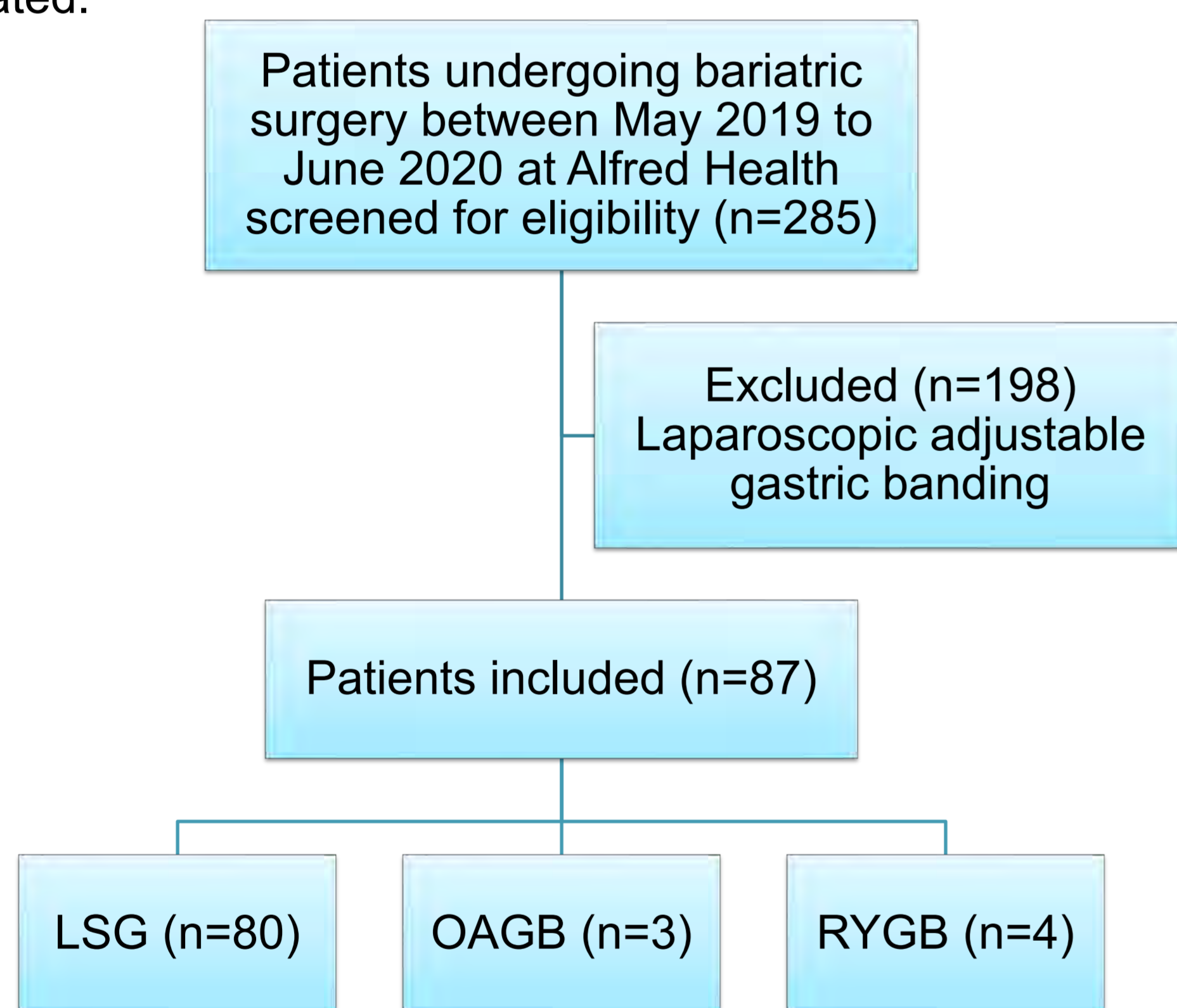


Figure 1. Study population flow diagram

### Results

Eighty-seven patients were included, the median age was 45 years, and 84% were female.

Table 1. Patient demographics

Patient factor	Value
Median age, years (IQR)	45 (36-52)
Female sex, n (%)	73 (84)
Median BMI kg/m <sup>2</sup> (IQR)	48 (43-52)
Median Apfel score* (IQR)	3 (2-3)

\*one point for each risk factor: female gender, non-smoker, use of post-operative opioids, history of PONV or motion sickness

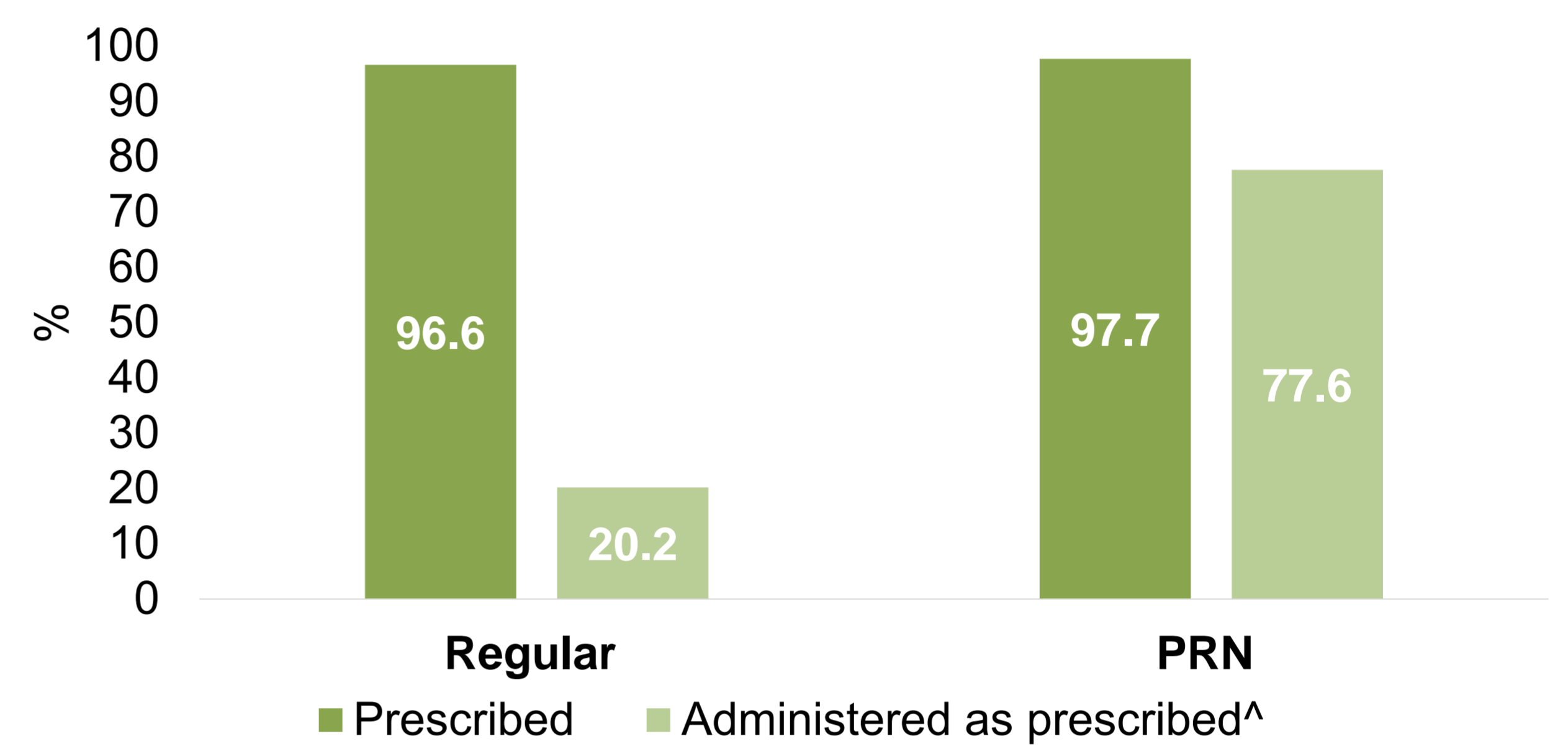
Table 2. Intraoperative and postoperative antiemetic use

No. regular antiemetics	Intraoperative, n%	POD 0, n% (n=87)	POD 1, n% (n=87)	POD 2, n% (n=81)	POD 3, n% (n=32)
0 antiemetics	2 (2)	16 (18)	2 (2)	0 (0)	0 (0)
1 antiemetics	18 (21)	68 (78)	83 (96)	74 (91)	28 (88)
2 antiemetics	48 (55)	3 (4)	2 (2)	7 (9)	4 (12)
3 antiemetics	19 (22)	0 (0)	0 (0)	0 (0)	0 (0)

### Results

Table 2. Documented PONV incidence, by post-operative day (POD)

	POD 0 (n=87)	POD 1 (n=87)	POD 2 (n=81)	POD 3 (n=32)
Documented PONV episodes, mean (SD)	0.2 (0.6)	0.9 (1.4)	0.3 (0.6)	0.2 (0.5)
Number of patients experiencing PONV, n (%)	14 (16)	34 (39)	14 (17)	6 (19)



<sup>^</sup>PRN antiemetics were considered to be administered as prescribed if ≥1 dose was administered

Figure 2. Utilisation of antiemetic orders during admission

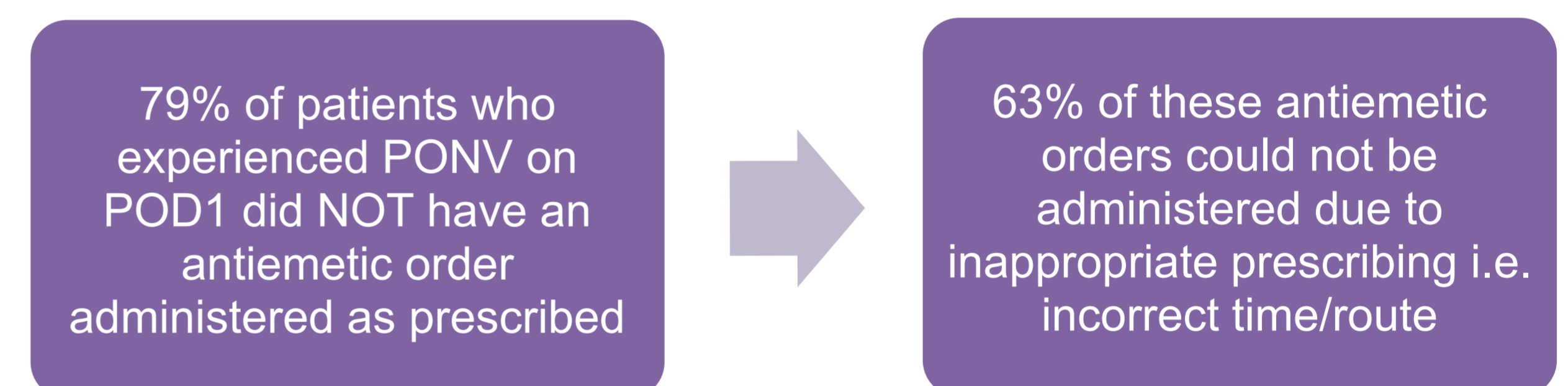


Figure 3. Antiemetic prescribing on post-operative day (POD) 1

### Discussion

The documented incidence of PONV episodes was low, however appears underreported given the high calculated risk of PONV and frequent usage of PRN antiemetics. This is supported by the highly emetogenic nature of bariatric surgery identified in other studies.<sup>1,2</sup>

Multimodal antiemetics are key in mitigating the risk and treatment of PONV. The high Apfel score observed indicates a requirement for >2 intraoperative antiemetics.<sup>5</sup> As 23% of patients received <2 antiemetics intraoperatively, the risk of PONV in this cohort was likely increased. This is further confounded by variations in post-operative antiemetic use.

Antiemetics prescribed in the recovery room are subject to a 6-hour auto-stop digital rule, creating the need for new antiemetic orders to be electronically prescribed. This break in continuity of care may introduce time delays and suboptimal prescribing of dosage times, formulation and route of administration on POD1. This is consistent with the observed lack of administration of regular antiemetic doses on POD1.

Standardisation of practice via a local guideline and EMR-embedded decision support tool may mitigate the risk of varied and inappropriate prescribing and ensure access to safe, appropriate and timely antiemetic therapy.

This study was limited by the use of retrospective data and minimal PONV episodes documented, which is unlikely to reflect actual patient experience.

### Conclusion

The highly emetogenic nature of bariatric surgery suggests the observed low incidence of PONV episodes was underreported. There was a significant variation in local usage of antiemetics based on intraoperative and post-operative prescribing and administration. Utilisation of multimodal antiemetics and appropriate selection of formulation and route are key areas where standardisation of practice could optimise PONV management. The impact of implementing a local guideline and EMR-embedded decision support tool will be investigated in a post-intervention study.

### References

- Schumann R, et al. Postoperative nausea and vomiting in bariatric surgery: position statement. *Surg Obes Relat Dis.* 2021;17(11):1829-1833.
- Varner KL, March AL. Prevention of Nausea and Vomiting After Laparoscopic Sleeve Gastrectomy: Are We Doing Enough? *AANA J.* 2020;88(2):142-147.
- Feinleib J, et al. Postoperative nausea and vomiting. UpToDate. Updated February 14, 2023
- Berger ER, et al. Prevalence and Risk Factors for Bariatric Surgery Readmissions: Findings From 130,007 Admissions in the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program. *Ann Surg.* 2018;267(1):122-131.
- Bui T, et al. Post-operative nausea and vomiting in adults. Alfred Health. Updated June 9th, 2021.