

An Audit of Postoperative Nausea and Vomiting Prophylaxis in Patients Undergoing Surgery at a South-East Queensland Hospital

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Introduction

Postoperative nausea and vomiting (PONV) is a common adverse effect of general anaesthesia which can lead to patient dissatisfaction, prolonged post-anaesthesia care unit (PACU) stay, unanticipated delayed discharge and overall health care costs. The incidence of PONV is approximately 30% and can be as high as 80% in high risk patients.¹ The Australian and New Zealand College of Anaesthetists (ANZCA) endorses the Society of Ambulatory Anaesthesiology (SAA) guidelines for the management of PONV.

As such, appropriate patient risk identification, risk documentation and implementation of interventions are required to reduce the burden of PONV to both patients and our health care system.

Objectives

This retrospective cohort analysis evaluates the compliance of patient risk stratification, risk documentation and the administration of PONV prophylactic agents against the current recommended SAA guidelines at Mater Hospital, South Brisbane. In addition to overall compliance, we aim to collect data on the incidence of PONV in the Post-Anaesthesia Care Unit (PACU).

PONV incidence is further characterised into different sub-groups including gender, emetogenic versus non-emetogenic surgery, and level of risk. Emetogenic surgery was defined in this audit to be gynaecological, abdominal or Ear, Nose and Throat procedures.¹

The types of interventions used to prevent PONV, and the frequency of their use were also identified as a secondary objective of this audit.

Methods and Materials

All adult patients who underwent elective surgery with general anaesthesia and/or regional anaesthesia (excluding ophthalmic procedures utilising only regional block techniques) over a one-week period in early February 2018 were identified by a historical review of Operating Room Management Information System (ORMIS) data. Once patients were identified, a review of patient records via Mater Hospital's electronic database Verdi allowed the review of clinical records, anaesthetic records and drug charts to obtain the data required. In particular, we focused on PONV risk stratification, PONV risk documentation, antiemetic interventions used, and the incidence of PONV in PACU.

The current SAA guidelines¹ provided standards to which our results were compared. This was based on the Apfel score (female sex, history of PONV and/or motion sickness, non-smoking status, use of postoperative opioids), where 0-1, 2, 3 or more risk factors were grouped as "low", "medium", "high" risk groups, respectively. From there, we compared appropriate use of interventions according to risk level: low risk (no intervention), medium risk (1 or more interventions), high risk (2 or more interventions).

Results

This audit comprised of 193 patients and we found appropriate PONV risk documentation in only 18% of cases (Figure 1). Despite this, PONV occurred in only 14 of all patients (7.25%). Overall compliance with the SAA guidelines regarding adequate intervention use to specific risk groups was inconsistent (98% for moderate risk, and 76% for High risk patients) as shown in Figure 2.

With regards to PONV incidence across sub-groups, there was a statistically significant increase in documented cases as overall risk level rose ($p=0.049$). There was no statistically significant difference across genders or emetogenic vs non-emetogenic surgery. The most frequently used interventions were dexamethasone (32%), ondansetron (27%) and propofol TCI (25%) (Figure 3).

	Number of Patients	Percentage of patients
Total number of patients included in audit	193	
Patients with PONV risk assessment documented	35	18.13471503
Low risk patients who received no interventions	5	15.15151515
Moderate risk patients who received 1 or more interventions	52	98.11320755
High risk patients who received at least 2 interventions	81	75.70093458
Incidence of PONV	14	7.25388601

Figure 1. Compliance with SAA Guidelines

Level of Risk	Number of Patients	% Within Risk Group	PONV Incidence
Low risk			
No intervention	5	15%	0
Intervention/s	28	85%	0
Medium Risk			
1 or more intervention/s	52	98%	2
No intervention	1	2%	0
High Risk			
2 or more interventions	81	76%	9
0 or 1 intervention	26	24%	3

Figure 2. Interventions Used Per Risk Group

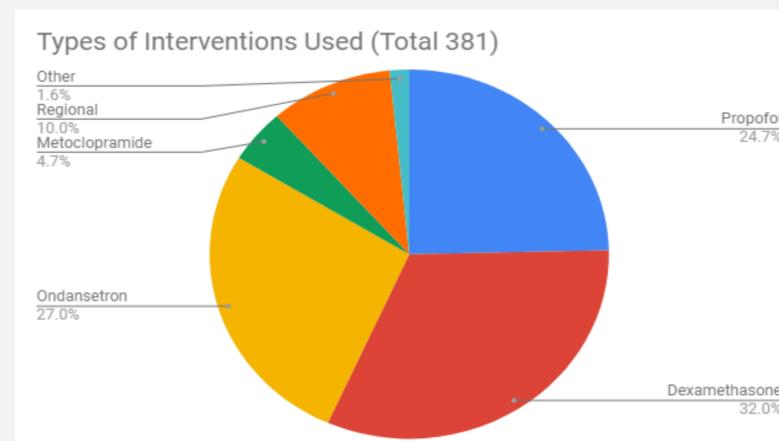


Figure 3. Types of interventions used per risk group

PONV Across Risk Groups		
	PONV	no PONV
Low	0	33
Med	2	51
High	12	95
PONV Across Gender		
	PONV	no PONV
Male	1	57
Female	13	122
PONV across types of surgery		
	PONV	no PONV
Emetogenic	7	89
Non-emetogenic	7	90

Figure 4. PONV across risk groups

Discussion

Overall PONV risk documentation was low (18%). Whilst all patients received a pre-surgical anaesthetic evaluation, PONV risk was explicitly documented only if it was a pertinent feature of the patient's anaesthetic history. 98% of the patients who were in the Medium Risk group received the appropriate interventions, but only 76% of the High Risk group received appropriate interventions.

In regards to secondary objectives, we saw increased PONV incidence in the Female and High Risk groups, supporting existing literature.¹ No relationship was found in relation to the type of surgery. Dexamethasone, Ondansetron and Propofol TCI were noted to be the preferred interventions used to prevent PONV.

The inclusion of multiple surgical sub-specialties was a strength of this audit, as it allowed a more accurate representation of PONV incidence and prevention strategies across different case types. This in itself may better reflect the practices regarding PONV prevention in other tertiary facilities in Australia.

One of the limitations of this audit was that both general and regional anaesthetic techniques were included, which may have confounded data relating to the number of interventions used to prevent PONV. For many of these cases, regional techniques were used for reasons other than PONV prevention, though nonetheless would have decreased the risk of PONV incidence. Similarly, the use of dexamethasone and propofol TCI may have been for purposes other than PONV prevention (e.g. preferred anaesthetist technique). Furthermore, only PACU records were used to identify PONV incidence, and the overall sample size was small (193 patients over a one week period). In future audits, the inclusion of medication chart review to identify PRN anti-emetic use on the ward post-PACU discharge, and a longer audit period may reveal more cases of PONV.

Conclusions

Ultimately, while post-operative nausea and vomiting remains well treated and prevented there is consistently room for improvement. An addition of a PONV category to a pre-anaesthetic evaluation (e.g. with a simple protective vs predictive factor list) could improve risk stratification, prevention and management of PONV in the perioperative setting.

References

- Gan TJ, Diemunsch P, Habib AS, et al. Consensus guidelines for the management of postoperative nausea and vomiting. *Anesth Analg*. 2014;118(1):85-113.