Post-Operative Nausea and Vomiting Guideline

1. Guiding Principles

1.1 Background

Post-operative nausea and vomiting (PONV) is one of the most common adverse events in the postoperative period with an estimated incidence of 30% in the general surgical population to as high as 80% in high risk cohorts. This can be a highly distressing experience and is associated with significant patient dissatisfaction.[2]

PONV usually resolves or is treated without sequelae but may require unanticipated hospital admission and delay recovery room discharge. In addition, vomiting or retching can result in wound dehiscence, oesophageal rupture, aspiration, dehydration, increased intracranial pressure and pneumothorax.

1.2 Pathophysiology[1]

Central mechanisms – Nausea and emesis can be triggered by higher cortical centres communicating with the central pattern generator (formerly called the vomiting centre) in the medulla. In the perioperative period, fear, pain, anxiety and stimulation of the vestibular system may cause nausea and vomiting.

Peripheral mechanisms – Direct gastric stimulation from gastric trauma, blood or toxins induces release of mediators, thereby activating the 5-HT receptors. Bowel surgery and blood in the gastrointestinal tract from oral or ENT surgery may cause nausea and vomiting via this pathway.

Drugs and toxins – The mechanisms by which drugs and toxins cause nausea and vomiting are complex and incompletely understood. Both opioids and inhalation anaesthetics may cause PONV by stimulation of the area postrema at the base of the fourth ventricle in the medulla. The area postrema then communicates with the central pattern generator via dopamine and serotonin to trigger the vomiting reflex.

The purpose of this guideline is to:

- reduce the total incidence of PONV
- minimise the severity of PONV when occurring
- improve the overall patients', families' and professionals' satisfaction
- avoid unnecessary hospital admission and/or prolonging hospital stays

2. Guideline

In order to have a systematic approach, the clinicians dealing with this problem should approach it in stages.

2.1 Preoperative risk identification and stratification

Adults:
A useful tool the risk in adults (Apfel score)[2]

- Female Gender
- Non-smoking status
- History of PONV and/or motion sickness
- Perioperative use of opioids

0, 1, 2, 3, and 4 risk factors correspond to PONV risks of approximately 10%, 20%, 40%, 60%, and 80%, respectively.

Children:
A semi quantitative tool for children's risk calculation[1]:

- Age above 3 years
- History of PONV and/or motion sickness
- Family history of PONV and/or motion sickness
- Post pubertal female
- Surgery longer than 30 minutes
- Adeno tonsillectomy
- Strabismus surgery
- Volatile anaesthetics
- Long acting opioids

0 factors – low risk; 1-2 factors - intermediate risk; ≥3 factors - high risk

2.2 Intraoperative manoeuvres and prophylaxis

At this stage an appropriate plan should be devised for intra and postoperative management for patients at intermediate and high risk.

- adequate hydration (crystalloid 10-30 ml/kg)
- opioid sparing techniques (NSAID, paracetamol, alpha agonists, lignocaine infusion for abdominal procedures, ketamine, local/neuraxial/regional anaesthesia)
- volatile anaesthetics and nitrous oxide (N_2O) sparing anaesthesia (Total Intravenous Anaesthesia)
- avoiding anticholinesterases for reversal
- use of specific antiemetics of different class: 1-2 agents for intermediate and 3 or more agents for high risk patients.

Suggested classes of antiemetics:

1. First line Agents
   - corticosteroids (dexamethasone)
   - 5HT antagonists (ondansetron)

2. Second line agents
   - dopamine 2 receptor antagonists (prochlorperazine, metoclopramide)
   - butyrophenone (droperidol, haloperidol)

3. Third line agents
   - anticholinergic (hyoscine)
   - antihistamine (cyclizine, promethazine) - **caution**

Special caution with promethazine – restricted listing due to its caustic (necrotic) tissue effect if extravasated. To be used only in severe PONV as last line treatment.

It is a duty of the prescriber to be familiar with the doses, most effective timing, side effects, inter-reactions and other aspects of the medications considered.

Use Appendix 1: PONV Treatment Pathway as a guide

2.3 Postoperative rescue treatment for failed prophylaxis or not treated patients at risk

- Initiate the form GS MR174A Post Operative Nausea and Vomiting Pathway
- Dosing and timing of the agents chosen should be recorded and signed.
- The nausea score should be documented and followed up with the routine ward observations.

Nausea score:
0 = No nausea
1 = Nausea only
2 = 1-2 vomits in 15 minutes
3 = more than 2 vomits or continuous vomiting

- If the score is ≥1, proceed as per flow chart in the form.
- If the treatment has failed in the next 3 hours, an admission should be arranged for day case procedures.
- A follow up by the attending or on call anaesthetist would be appropriate.
- Documentation in the anaesthetic record and the file.

3. Definitions

Post-Operative Nausea and Vomiting (PONV)	Any nausea, retching or vomiting occurring during the first 24-48 hours after surgery.

4. Roles and Responsibilities

PONV managers are to:
- follow the general principles outlined in this document
- assume multimodal approach in prevention / treatment of the PONV
- escalate the problem to a senior colleague / anaesthetist when necessary.

5. Compliance

Guidelines are designed to provide staff with evidence-based recommendations to support appropriate actions in specific settings and circumstances. As such, WACHS guidelines should be followed in the first instance. In the clinical context, where a patient's management should vary from an endorsed WACHS guideline, this variation and the clinical opinion as to reasons for variation must be documented in accordance with the Documentation Clinical Practice Standard.

Whilst it is recommended that anaesthetists follow this guideline, reasonable deviations from it, as may be the clinical experience of the prescribing doctors are supported. As per the WACHS Documentation Clinical Practice Standard (section 5.3.1), where the patient's management should vary from an endorsed WACHS policy or guideline, this variation and clinical opinion as to reasons for variation must be documented[3] [in the patient's healthcare record].

WACHS staff are reminded that compliance with all policies is mandatory.

6. Records Management

All WACHS clinical records must be managed in accordance with Health Record Management Policy.

7. Evaluation

Review of the PONV guideline is to be conducted every three (3) years by the Clinical Lead of Anaesthesia, including discussion at the Anaesthetic Committee meeting. The review should be based on current evidence.

8. Standards

National Safety and Quality Health Service Standards - 1.27, 4.03, 4.04, 4.13, 4.14 5.10, 5.11, 5.12.

9. Legislation

Medicines and Poisons Act 2014 (WA)
Medicines and Poisons Regulations 2016 (WA)

10. References

1. Feinleib J, Kwan, LH, Yamani A. Postoperative nausea and vomiting, UpToDate 2021. Available from www.uptodate.com
2. Gan TJ, Belani KG, Bergese S, Chung F, Diemunsch P, Habib, AS et al. Fourth consensus guidelines for the management of postoperative nausea and vomiting. Anesth. Analg. 2020 Aug 1;131(2):411-448.
3. WACHS Documentation Clinical Practice Standard, May 2021

11. Related Forms

GS MR174A Post Operative Nausea and Vomiting Pathway

12. Related Policy Documents

WACHS Medication Handling and Accountability Policy
WACHS Medication Prescribing and Administration Policy
WACHS Pre and Post Procedural Management Clinical Practice Standard
WACHS Great Southern Medical Governance for Post-Operative Patients Procedure – Great Southern

13. Related WA Health System Policies

Medicines Handling Policy – MP139/20
Statewide Medicines Formulary Policy – MP0077/18

14. Policy Framework

Public Health Policy Framework.

15. Appendix

Appendix 1: PONV Treatment Pathway

This document can be made available in alternative formats on request for a person with a disability

Contact:	Head of Anaesthetics		
Directorate:	Medical Services	**EDRMS Record #**	ED-CO-14-34305
Version:	4.00	**Date Published:**	09 December 2022

Appendix 1: PONV Treatment Pathway