

# POST-OPERATIVE NAUSEA AND VOMITING: MANAGEMENT IN CHILDREN - SCH

## PRACTICE GUIDELINE<sup>®</sup>

### DOCUMENT SUMMARY/KEY POINTS

- Many children experience post-operative nausea and vomiting (PONV).
- The first line treatment of nausea in children is ondansetron.
- In some patient's prophylactic treatment should be considered.
- If treatment is unsuccessful contact the treating Anaesthetist.

### CHANGE SUMMARY

- Document due for mandatory review.
- Dose changes to reflect most recent consensus guidelines for the management of postoperative nausea and vomiting.
- Addition of corticosteroids and sedative antihistamines as a treatment option for nausea and vomiting.
- Addition of the Baxter Retching Faces (BARF) scale.
- Updated charts to reflect more recent guidelines and practice.
- Addition of non-pharmacological measures.

### READ ACKNOWLEDGEMENT

- SCH clinical nurses and medical officers caring for patients at risk of or experiencing post-operative nausea and vomiting should read and understand this document.

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

<b>Approved by:</b>	SCHN Policy, Procedure and Guideline Committee	
<b>Date Effective:</b>	1 <sup>st</sup> August 2021	<b>Review Period:</b> 3 years
<b>Team Leader:</b>	Recovery Educator	<b>Area/Dept:</b> Paediatric Recovery SCH

## Aim

Provide appropriate treatment and prophylaxis for perioperative nausea and vomiting and minimise time to discharge readiness.

## Background

Post-operative nausea and vomiting (PONV) occurs in approximately 25% of all paediatric surgical patients [1]. PONV can be distressing for both patients and their family, and can contribute to further medical complications such as dehydration. Many anti-emetics are available with varying effectiveness and side effects [1].

### Available Agents:

1. Serotonin 3 receptor antagonists: Ondansetron
2. Dopamine 2 (D2) receptor antagonists: Metoclopramide, Droperidol
3. Corticosteroids: Dexamethasone
4. Sedative antihistamine: Chlorpromazine, Cyclizine

Combinations of agents may increase antiemetic efficacy [2]. Examples include ondansetron with droperidol, ondansetron with dexamethasone and droperidol with dexamethasone.

Ondansetron is an effective prophylactic anti-emetic or for the treatment of patients experiencing nausea. Dexamethasone is most effective in reducing PONV when given at induction of anaesthesia [3]. Droperidol and metoclopramide are effective anti-emetics for treatment of late nausea and vomiting [4].

It is the unsubstantiated belief that children treated with droperidol are drowsier than those treated with ondansetron. This may be caused by practice variation where some anaesthetists choose to use high dose droperidol. Low dose droperidol is *not* associated with increase in drowsiness [5]. However, to be cautious, ondansetron is recommended as the first line anti-emetic in ambulatory patients. If anti-emetics cause **drowsiness**, patients should be nursed in Paediatric Recovery until they meet the Modified Aldrete criteria for discharge.

Refer to '[Post Operative Care-SCH Recovery Unit](#) - Practice Guideline' for further information on recovery discharge criteria.

<http://webapps.schn.health.nsw.gov.au/epolicy/policy/4591>

In **oncology patients**, chlorpromazine is an effective antiemetic for cytotoxic induced nausea and vomiting but has not been demonstrated to be effective for perioperative or opioid induced nausea and vomiting [2].

Use **dexamethasone** with caution in oncology patients, especially those at high risk of tumour lysis or diabetic patients [4].

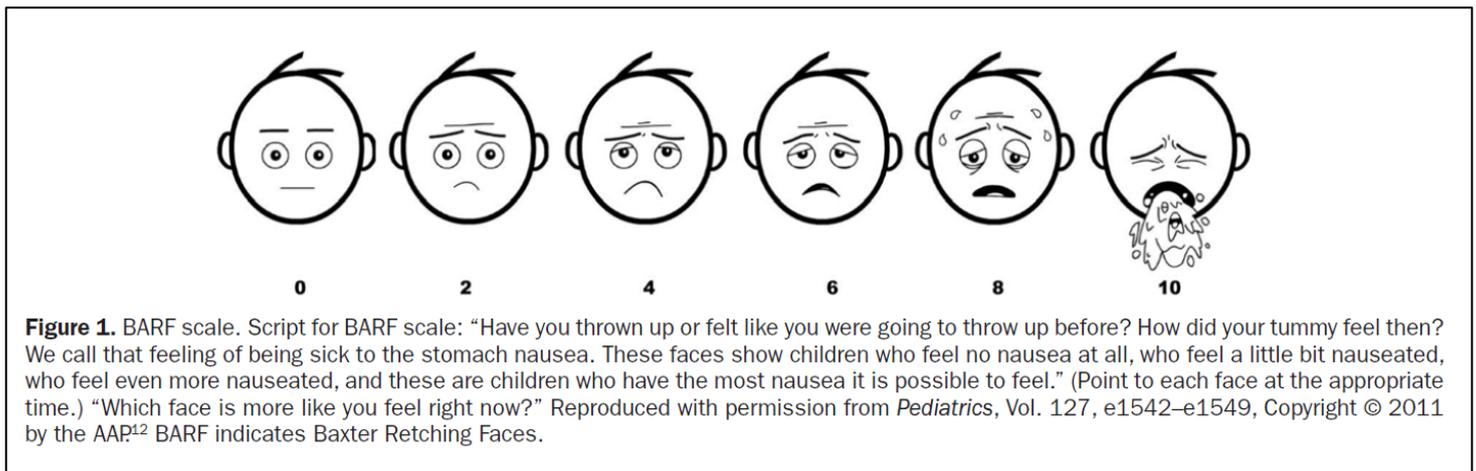
## Administration

### Appropriate Administration:

Prophylactic administration of anti-emetics improves patient outcomes and is more effective than a 'wait and see' approach for surgical procedures with a high anticipated rate of PONV [6, 7].

Early detection of a paediatric patient experiencing PONV can be challenging to identify. Use of a pictorial assessment called, Baxter Retching Faces (BARF), can assist in early detection of PONV. It is a tool appropriate for children aged  $\geq 6$  years to determine the need for anti-emetics [8]. Figure 1 displays the BARF scale.

**FIGURE 1:**



**Figure 1:** BARF scale and Script for BARF scale from 'Clinical Use of the Pictorial Baxter Retching Faces Scale for the Measurement of Postoperative Nausea in Children'[8]

## Identifying patients at risk of PONV

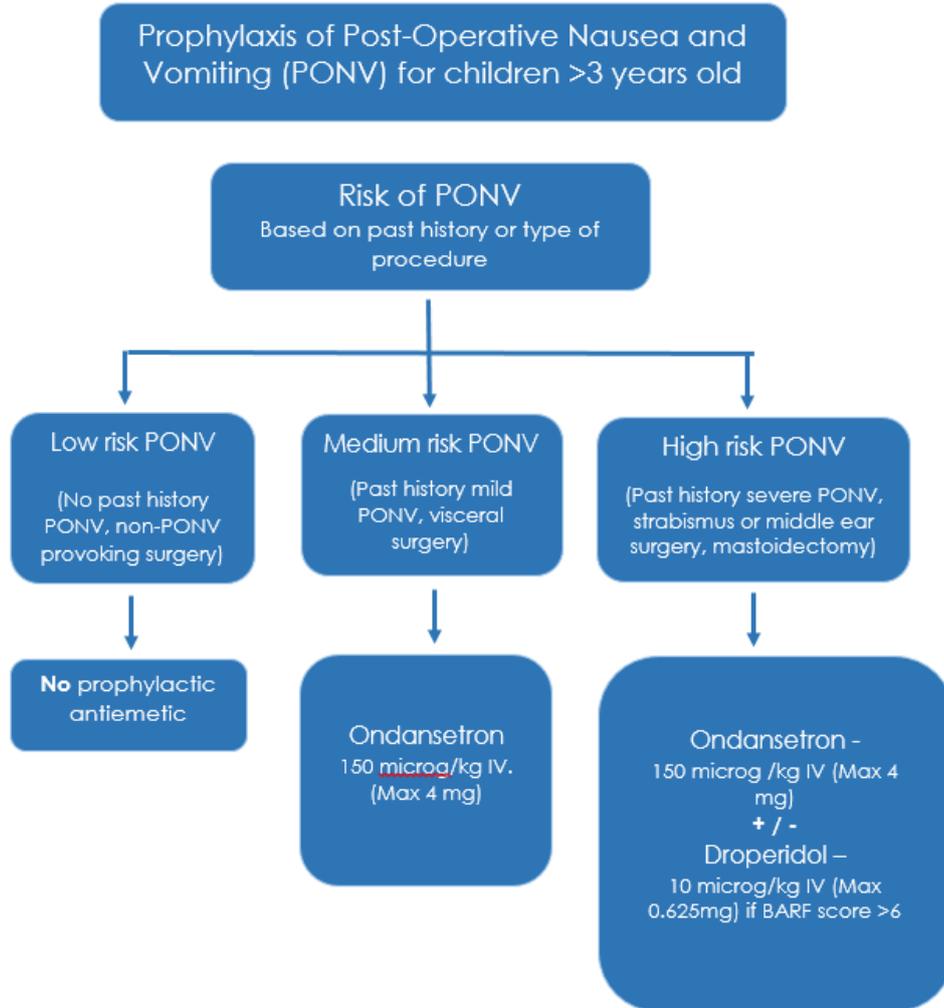
It is possible to identify children at high risk of postoperative vomiting and the evidence is presented in Table 1.

**TABLE 1:**

<b>Risk</b>	<b>Risk Factor (Post-operative Vomiting)</b>
<b>Low risk</b>	< 3yrs age
	Intraoperative fluids may reduce risk
<b>Increased risk</b>	Past history of PONV
	Past history of motion sickness
	Post pubertal girls
	Otoplasty
	Use of volatile anaesthesia if other risk factors present
	Use of longer acting intraoperative opioids
	Use of anticholinesterase drugs
	Mandatory oral fluids prior to discharge
	Genetic predispositions e.g. Single-nucleotide polymorphism and Cholinergic Receptor Muscarinic 3 or genetic mutations that alter effects of anti-emetics e.g. polymorphic drug-metabolizing enzymes
<b>High Risk</b>	General anaesthesia (GA) > 30mins
	Strabismus surgery
	Adenotonsillectomy
<b>Not a risk</b>	Pre-operational anxiety
	Obesity
	Smoking
	Nitrous oxide use during GA

Table 1: 'Summary of Patient, Surgical and Anaesthetic Factors associated with a higher risk of Postoperative Vomiting' from 2009 guidelines of the Association of Paediatric Anaesthetists of Great Britain & Ireland[9]

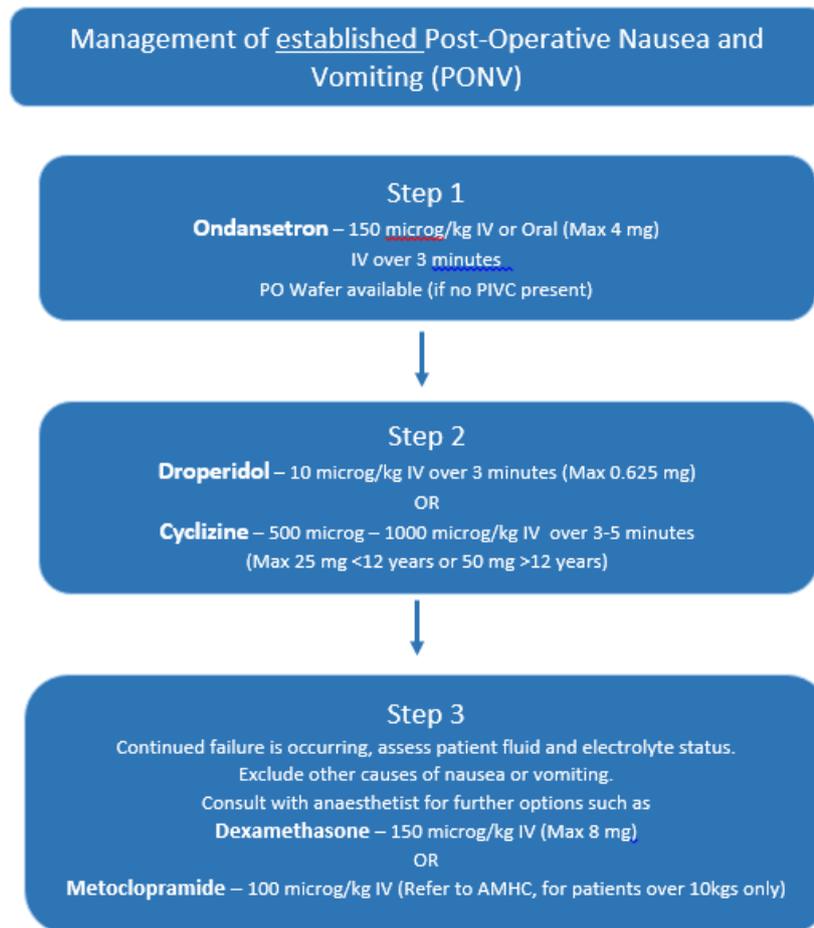
**Algorithm 1: PONV Prophylaxis (If not given in OT)**



Dosages based on children 2 years and older, sourced from AMH CDC [10].

## **Algorithm 2: Established PONV:**

A BARS score of > 4 is considered to be established PONV [11]. Clinical judgement is required for children under the age of 6 or for those who are unable to use the BARS score.



### **Notes:**

Based on dosages sourced from AMH CDC [10].

Recommended maximum **ondansetron** dose = 150 microg/kg (max 8 mg) 8 hourly [10]

**NOTE:** If the patient requires further anti-emetics, the anaesthetist may request a second dose of ondansetron to be given within the 8 hour time frame, this is appropriate as long as the total amount does not exceed 150 microg/kg

Recommended **droperidol** dose = 10 microg/kg (max 0.65 mg) up to 6 hourly [10]

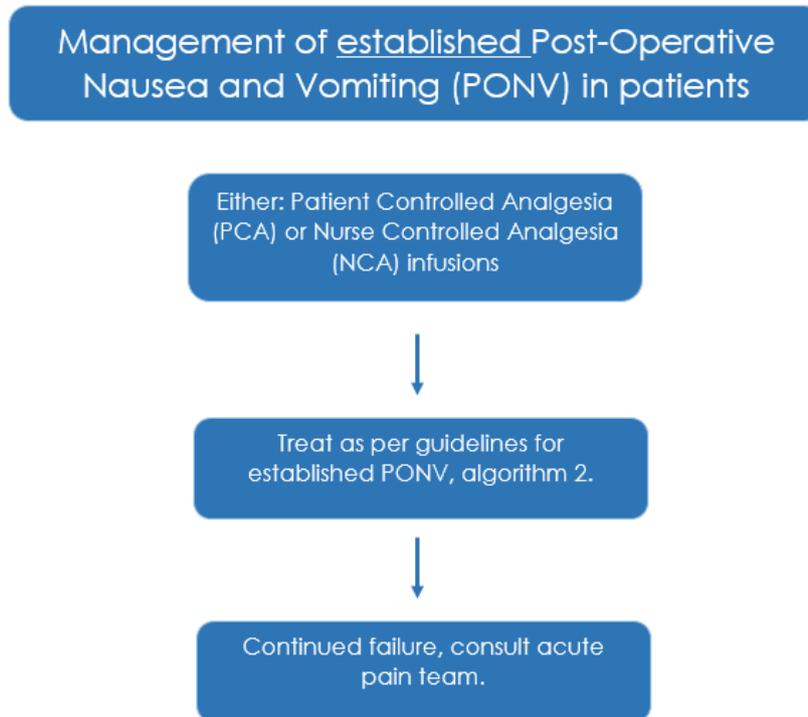
Recommended **cyclizine** dose = 500-1000 microg/kg (<12 years – max 25 mg or >12 years – max 50mg) 8 hourly [10]

Recommended **metoclopramide** dose = 100 microg/kg (max 10mg) 8 hourly [10]

Recommended **dexamethasone** dose = 150 microg/kg (max 8mg) once off dose [10]

All remaining anti-emetics used in Paediatric Recovery, are given intravenously. Refer to the local injectable guidelines for information about injection type and duration.

### **Algorithm 3: Established PONV in Patient Receiving IV Opioids:**



### **Non-pharmacological Measures:**

Non-pharmacological techniques can assist with the management of PONV such as:

- **Acupressure** is a beneficial adjunct to pharmacological treatments involving the application of pressure and massage to the P6 pressure point. See figure 1 below.

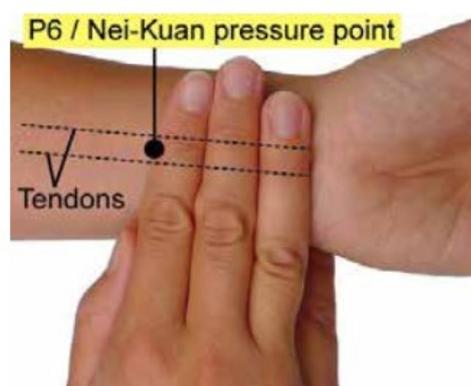


Figure 2: P6 “Neiguan” point location [12]

## References

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