MIL Oxford University Hospitals NHS Trust

Volume 5, No. 2 **July 2014**

This Medicines Information Leaflet is produced locally to optimise the use of medicines by encouraging prescribing that is safe, clinically appropriate and cost-effective to the NHS.

Management of Nausea and Vomiting in Adults

These guidelines describe current OUH formulary antiemetic options; detailing doses, licensed indications and contraindications for use. For full information please consult the BNF. Doses recommended are suitable for use in adult patients with normal renal and hepatic function. Chemotherapy or radiotherapy induced nausea and vomiting, vomiting in palliative care or hyperemesis are not covered, but relevant hyperlinks can be found at the end of the MIL.

Table 1: Recommended antiemetic treatments for the indications listed:

	Nausea/ Vomiting	**Vertigo**	**Post-op nausea & vomiting (PONV)**	**GORD** Gastro-oesophageal reflux disease	**Opioid-induced** (unlicensed)	**Meniere's disease**	**Delayed gastric emptying**
Betahistine						*	
Cinnarizine	*	*				*	
Cyclizine	*	*	*		*	*	
Domperidone	*						
Metoclopramide	*			*	*		*
Ondansetron			*				
Prochlorperazine	*	*	*			*	
Promethazine	*	*					

Drug[#]	**Dose**	**Contraindications/Cautions for use**
Betahistine	16mg TDS PO (to 48mg daily)	Contraindication: phaeochromocytoma Caution: asthma, history of peptic ulcer
Cinnarizine	30mg TDS PO	Cautions: Parkinson's disease; additive effects with CNS depressants
Cyclizine	50mg TDS PO/IM/IV	Caution: Elderly may be more prone to side-effects; risk of tachycardias; epilepsy; glaucoma; severe heart failure; GI obstruction; porphyria Additive effects with other CNS depressants e.g. anaesthetics, alcohol. Reports of abuse have been noted due to euphoric effects.
Domperidone	10mg TDS PO 30mg BD PR	Contraindications: prolactinoma; GI obstruction, perforation or haemorrhage **MHRA warning over ventricular arrhythmias and sudden cardiac death** **Updated MHRA warning limiting dose and use to nausea and vomiting** **EMA warning about domperidone-containing medicines**
Metoclopramide	10mg TDS PO/IV/IM	Contraindications: phaeochromocytoma; GI obstruction, perforation or haemorrhage; epilepsy; Parkinson's disease Caution: Elderly & under 20yrs more at risk of extrapyramidal side effects **MHRA warning over neurological effects and dosage**
Ondansetron	**Prophylaxis:**4mg IV at induction **Treatment**:4mg IV stat **Oncology**-dose variable	Cautions: QT interval prolongation; correct electrolyte imbalance **MHRA warning over QT interval prolongation with IV use** **OUH Medicines Information Bulletin: Intravenous ondansetron 2013**
Prochlorperazine	5-10mg TDS PO 3-6mg BD Buccally 12.5mg TDS IM	Contraindications: Parkinson's disease; epilepsy; narrow-angle glaucoma Caution: Elderly at risk of extrapyramidal side effects & hypotension; VTE Additive effects with other CNS depressants e.g. anaesthetics, alcohol.
Promethazine Hydrochloride	**Prophylaxis**:25mg PO at night **Treatment:** 25mg stat PO + 25mg ON 3 days	Contraindications: CNS depression; MAOI therapy Caution: Elderly may be more prone to side-effects; asthma; epilepsy, narrow-angle glaucoma; severe coronary artery disease.

[#]Other OUH formulary options include chlorpromazine, aprepitant, haloperidol, levomepromazine

Post operative nausea and vomiting

Nausea and vomiting are very unpleasant experiences for any patient and can lead not only to delayed recovery, but also to other complications like electrolyte imbalances, dehydration, tension on suture lines, and risk of pulmonary aspiration.

Postoperative nausea and vomiting (PONV) affects 20-30% of patients undergoing surgery.[1] PONV is defined as any nausea, retching or vomiting occurring ***within 24 hours after surgery*** and can be caused by a combination of factors, including use of anaesthetics, use of opioids, or disturbance of gastrointestinal function or vestibular mechanisms by the surgical procedure.

Assessment of PONV risk

Appropriate preoperative assessment of predicted PONV risk and corresponding prophylactic antiemetic use is **essential** to adequate PONV management. Simplified risk scores have been shown to be as accurate as more complex systems, and are more workable in clinical practice.[2] The type of surgical procedure should also be considered:

Table 2: Assessment of Risk Factors for PONV

Female sex	1 point
Non-smoker	1 point
History of PONV/motion sickness	1 point
Anticipated use of opioids post-operatively	1 point
Calculate total points	**= risk score**

Adapted from: Apfel CC et al: A simplified risk score for predicting postoperative nausea and vomiting. Anaesthesiology 1999; 91:693-700

Reduction of baseline risk

Anaesthetic technique has significant influence on incidence of PONV.[3] Reduce baseline risk by considering limitation of the use of:

- Inhalational agents (including nitrous oxide)
- Intra-operative opioids
- Anaesthetic reversing agents (neostigmine doses of more than 2.5mg)

Good hydration may reduce the incidence of PONV. Increased supply of supplemental oxygen has so far not proven to be of additional benefit.

Prophylaxis and treatment [1,4,5,6]

Prophylaxis:
For patients at low risk of PONV, prophylaxis is not recommended as potential benefit does not outweigh expenditure or potential exposure to adverse drug reactions.

Table 3: Prophylaxis of PONV

Risk Score	Risk of PONV	Recommendation
0 to 1	Up to 20%	**No prophylaxis** (*prophylaxis can be given if the consequences of vomiting post operatively would be detrimental e.g. wired jaw, increased intra-cranial pressure (ICP)).*
2	39%	At induction: **Dexamethasone** 4mg IV
3	60%	At induction: **Dexamethasone** 4mg IV **PLUS** End of operation: **Ondansetron** 4mg IV
4	78%	At induction: **Dexamethasone** 4mg IV **PLUS** End of operation: **Ondansetron** 4mg IV **PLUS** Use of **TIVA*** (containing propofol)

*Total intravenous anaesthesia

Table 4 – Rescue treatment[6-10]

Before prescribing - confirm antiemetic used intra operatively, use alternative agent for rescue.

	Recommendation
1st line	**Cyclizine** 25-50 mg IM/IV 8-hourly (PO if able to tolerate)
2nd line	**Prochlorperazine*** 12.5 mg IM 8-hourly 3-6mg buccal 12 hourly 5-10mg PO 8 hourly
3rd line	**Ondansetron** 4mg IM/IV **as a single dose** **Prescribe on STAT section of drug chart**

*If extrapyramidal side effects occur procyclidine can be found in the emergency drug cupboards on each hospital site.

In an over-sedated patient, give either cyclizine or prochlorperazine as first line therapy, and proceed to ondansetron as second line therapy. If nausea or vomiting continues more than 24 hours post operatively the patient should be reviewed to rule out other causes for their symptoms e.g. post-operative ileus.

Chemotherapy or radiotherapy induced nausea and vomiting

Please see the Thames Valley Cancer Network (TVCN) anti-emetic guidelines.

Nausea and vomiting in palliative patients

Please see the Oxfordshire Adult Palliative Care Guidelines.

Hyperemesis

Please see the Medicines Information Leaflet (MIL) on Management of Hyperemesis.

References:

1. Golembiewski J, Chernin E and Chopra T: Prevention and treatment of postoperative nausea and vomiting. Am J Health-Syst Pharm 2005;62:1247-60.
2. Apfel CC et al: Comparison of predictive models for postoperative nausea and vomiting. Br J Anaesth 2002;88:234-40.
3. Tramer MR: A rational approach to the control of postoperative nausea and vomiting: evidence from systematic reviews. Part I Efficacy and harm of antiemetic interventions, and methodological issues. Acta Anaesthesiol Scand 2001;45:4-13
4. Gan TJ et al: Consensus guidelines for managing postoperative nausea and vomiting. Anesth Analg 2003;97:62-71.
5. Tramer MR: A rational approach to the control of postoperative nausea and vomiting: evidence from systematic reviews. Part II Recommendations for prevention and treatment, and research agenda. Acta Anaesthesiol Scand 2001; 45:14-19
6. Gan TJ et al, Society for ambulatory anesthesia guidelines for the management of postoperative nausea and vomiting. Ambulatory Anesthesiology 2007; 105(6): 1615-1628
7. Smith HS, Smith EJ, Smith BR: Postoperative nausea and vomiting. Ann Palliat Med 2012; 1 (2): 94-102
8. Tramer MR et al. A quantitative systematic review of ondansetron in treatment of established postoperative nausea and vomiting. BMJ. 1997 Apr 12;314(7087):1088-92
9. Kazemi-Kjellberg et al. Treatment of established postoperative nausea and vomiting: a quantitative systematic review. *BMC Anesthesiology* 2001, **1**:2
10. Tramèr MR, Reynolds DJM, Moore RA, McQuay HJ: Efficacy, dose response, and safety of ondansetron in prevention of postoperative nausea and vomiting: A quantitative systematic review of randomized placebo-controlled trials. *Anesthesiology*1997, **87**:1277-1289

Prepared by:

Clare Faulkner - Rotational Specialist Clinical Pharmacist (Specialist Surgery-ENT, plastics, ophthalmology); Janice Craig – Medicines Information Pharmacist; Victoria Mott – Lead Medicines Information Pharmacist

Review date: *July 2017*