SCGH ED Adult Antiemetic Guideline

Introduction

Nausea and vomiting (N&V) is a common and troubling complaint in the Emergency Department (ED). There are multiple neural pathways implicated in nausea and vomiting, including serotonin; dopamine; histamine; neurokinin; and cannabinoid receptor pathways. It is with these physiological / chemically mediated changes in mind that we should assess N&V with respect to cause and the pathways implicated prior to prescription decisions.

The aetiology is diverse and treatment is often commenced empirically. The choice of antiemetic should be determined by the clinical situation.

We have identified 12 major causes of N&V in the ED: Table 1: Adult Antiemetic Guideline. Always consider the clinical picture (most likely cause), co- morbidities, age & physiological state as well as drug interactions and potential adverse effects prior to prescribing.

Medication Options

A Cochrane Systematic review found that "In ED populations, there is no definite evidence to support the superiority of any one drug over any other drug, or the superiority of any drug over placebo." Participants receiving placebo often reported clinically significant improvement in nausea, implying general supportive treatment such as IV fluids, care and reassurance may be sufficient for most people.

There are papers that support the use of smelling isopropyl (alcohol wipe) at triage for antiemetic effect. This highlights the individual experience and response to nausea and its treatments amongst the population.

Please refer to TABLE 2: Medication Class for specific information regarding the various recommended medications. This is not a complete list of indications, contraindications, and precautions for each drug. If unsure, please refer to MIMS for complete listings prior to prescribing.

This guideline was developed in response to a shortage of IV Prochlorperazine (April 2023), hence, alternatives should be considered. Please discuss with your Senior for guidance.

SCGH ED Adult Antiemetic Guideline

TABLE 1: Seek & treat the cause of the nausea and vomiting.
The choice of antiemetic drug is determined by the clinical situation.
Please refer to the entire Guideline for further details and consult a Senior Clinician for guidance.
This Guideline was developed for use within SCGH Adult ED only.

Numbering in the table indicates 1st, 2nd, or 3rd line of therapy.
Medications from the same class should not be given in combination (medication classes are not distinguished on this quick reference table). Check this prior to prescribing. Avoid Dopaminergic agents in Parkinson's Disease and caution <20yrs age.

MIGRAINE

1st - Metoclopramide 10mg PO/IM/IV 8hrly (max 30mg/day)
2nd - Prochlorperazine 12.5mg IM/IV-slow) 8hrly or 20mg PO single
2nd - Domperidone PO 10mg 8hrly (max 30mg/24hrs)
2nd - Ondansetron 4 - 8mg 8hrly PO/IV (max 32mg/24hrs)
3rd - Chlorpromazine 12.5mg IV (slow infusion over 30min) once only

- Avoid opioid analgesia

VERTIGO

1st - Promethazine 25mg PO 4hrly (max 100mg/24hr) **OR**
1st - Prochlorperazine PO 5-10mg 8hrly
2nd - Diazepam 5mg PO 8hrly
2nd - Ondansetron PO/IV 4 - 8mg 8hrly
3rd - Droperidol* 1mg - 2.5mg IV 6hrly (*not F1)

- Meniere's Syndrome - Betahistine 8 - 16mg PO TDS
- Consider central causes

CNS (SAH/SOL)

1st - Dexamethasone 4 - 8mg PO/IM/IV 8hrly
1st - Ondansetron 4-8mg 8hrly PO/IV (max 32mg/day)
2nd - Droperidol* 0.625mg - 1.25mg IV 8hrly (*not F1)
2nd - Lorazepam* 0.5mg - 2mg, PO/IV 8-12hrly (*not F1)

- Consider sedating effets of 2nd line agents in CNS conditions

GASTROENTERITIS

1st - Ondansetron 4mg – 8mg PO/IV 8hrly (max 32mg/24hr)
1st - Metoclopramide PO/IM/IV 10mg 8hrly (max 30mg/day) **OR**
1st - Prochlorperazine 12.5mg IM/IV-slow) 8hrly **OR**
1st - Prochlorperazine PO 20mg stat or 5-10mg 8hrly (max 30mg/24hrs)

BOWEL OBSTRUCTION

1st - Ondansetron 4 - 8mg 8hrly PO/IV (max 32mg/day)
2nd - Droperidol* 0.625mg - 1.25mg IV 6hrly (*not F1)

- Caution Metoclopramide / antiemetics with prokinetic effects - may be prescribed by Senior Clinician in specific circumstances
- Consider NBM & NGT

CYCLICAL VOMITING

1st - Capsaicin 0.075% cream topical to abdomen 12hrly (if due to cannabis)
1st - Ondansetron 4-8mg PO/IV 8hrly
2nd - Midazolam 0.5mg - 2mg IV with slow titration (may need infusion)
2nd - Diazepam* 2.5 - 5mg IV once (*not F1)
3rd - Droperidol* 1.25mg IV 6hrly (*notF1)
3rd - Dexamethasone 4-8mg IV stat dose

- Check cannabis use; consider causes & consider PPI

OPIOID INDUCED

1st - Ondansetron 4 - 8mg 8hrly PO/IV (max 32mg/day)
1st - Metoclopramide PO/IV 10mg 8hrly (max 30mg/24hrs)
2nd - Droperidol* 0.5mg - 1.25mg IV 6hrly (*not F1)

- Poor evidence for prophylactic use but consider if vomiting potentially detrimental (eg - spinal precautions etc) Previous Opioid Induced NV (OINV) best predictor for recurrence

CHEMOTHERAPY

1st - Ondansetron PO/IV 4mg - 8mg 8hrly
2nd - Olanzapine PO 2.5-5mg 12hrly PRN
2nd - Lorazepam 0.5mg - 2mg PO 12hrly
2nd - Dexamethasone PO 2 - 8mg 8hrly
2nd - Haloperidol PO 0.5mg-2mg 6hrly **OR**
2nd - Droperidol* 0.625 - 1.25mg 8hrly (*not F1)
3rd - Metoclopramide IV 10mg 8hrly

- Liaise with Oncology for alternative treatment if ongoing sympotms

PALLIATIVE CARE

- Metoclopramide SC 30mg/24hrs**
- Haloperidol SC 1mg-2.5mg/24hrs**
- Promethazine SC 12.5-25 mg/24hrs**
- Olanzapine PO 2.5 - 5mg 12hrly
- Hyoscine PO/SC 20mg 6hrly**
- Lorazepam* 0.5 - 2mg 6hrly (*not F1)
- Clyclizine 25 - 50mg IV/SC 8hrly**
- Consider Subcutaneous infusions
- **Liaise with Pall Care Team (dosing may be adjusted under specialist advice)
- Link WA Paliative Care Guideline

POSTOPERATIVE NAUSEA & VOMITING

1st - Ondansetron 4-8mg 8hrly PO/IV
1st - Dexamethasone 4 - 8mg IV daily
1st - Droperidol* 0.5mg - 1.25mg IV 6hrly (*not F1)
2nd - Lorazepam* 0.5 - 1mg PO/IV 6hrly *not F1)
2nd - Cyclizine 25 -50mg IV 8hrly

- Consider medications given intra-operatively

PREGNANCY

1st - Ginger (Cat A) up to 1g daily (not available SCGH, use pts own)
1st - Vit B6 / Pyroxidine (Cat A) PO 12.5 - 25mg 8hrly **OR** PO 12.5mg mane & midi & 25mg nocte (*F1 only for diagnosed Hyperemesis Gravidarum)
2nd - Metoclopramide (Cat A) PO/IM/IV 10mg 8hrly
3rd - Ondansetron (Cat B1) PO/IV 4 - 8mg 8hrly

- Link WA KEMH Guidelines

HYPEREMESIS GRAVIDARUM

1st - Metoclopramide (Cat A) PO/IV 10mg 8hrly
2nd - Ondansetron (Cat B1) PO/IV 4 - 8mg 8hrly
3rd - Prochlorperazine (Cat C) PO 5 - 10mg 6hrly (**OR** 12.5mg IM 8hrly). **OR**
3rd - Promethazine (Cat C) PO 10 - 25mg PO 6- 8hrly

- Doxylamine recommended for outpatient therapy
- IV Hydration is key
- Check Ketones
- Link WA KEMH Guidelines

*Not F1 = Use does not meet SCGH Pharmacy Guidelines for this indication / off label prescribing

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TABLE 2 : Medication Class - further information on Medications in Table 1.

Anti-cholinergic				
Drug / F1	Pregnancy / BF	MOA / Indications	Side Effects	Dose
Hyoscine Butylbromide F1 unrestricted	Category B2 Pregnancy - safe to use BF - appears safe	Not used for its antiemetic properties directly, hyoscine is a powerful smooth (antispasmodic) muscle relaxant (through muscarinic receptors) and has some antiemetic properties. Commonly used with other antiemetic agents in Palliative care settings	Contraindicated in paralytic or obstructive ileus myasthenia gravis and glaucoma. May cause drowsiness. Blurred vision, palpitations and dry mouth are rare	Palliative care PO/subcut/IV 20mg 6hrly (120mg/24hrs) *Refer Pall Care Guidelines/Advice

Anti-histamine				
Drug / F1	Pregnancy / BF	MOA / Indications	Side Effects	Dose
Betahistine F1 unrestricted	Category B2 Pregnancy - limited data BF - limited data	The exact MOA is unknown. It is believed to be a weak H_1 agonist and stronger H_3 antagonist in CNS & autonomic. It is used in the treatment of Meniere's and vertigo, though not to treat the emetic elements of these conditions, and evidence is very weak.	Multiple medication interactions Commonly causes headache, nausea, and dyspepsia.	Nausea & Vomiting PO 8mg-16mg 8hrly Maximum of 48mg/24hrs
Cyclizine F1 restricted	Category B3 Pregnancy - safe to use BF - short term use appears safe (limited data). Main concern is sedation of mother	Potent antihistamine (H_1 receptor) with anticholinergic and antiemetic properties Used for Post-operative nausea & vomiting (PONV), and motion sickness.	Sedation, anticholinergic effects, (caution in patients with underlying glaucoma or those predisposed to urinary retention).	PONV 25mg-50mg IV 8hrly Motion Sickness: 25mg PO 8 – 6hrly Palliative care Subcut/IV 25-50mg 8hrly (max 200mg/24hrs) *Refer Pall Care Guidelines/Advice
Promethazine F1 tablet unrestricted, injection restricted	Category C Pregnancy - safe to use BF - short term use appears safe (limited data). Main concern is sedation of mother	Potent antihistamine (H_1 receptor) and sedative-hypnotic effects, also antiemetic, antivertigo, anti-motion sickness, anti-cholinergic effects. Often used for motion sickness	Sedation, and anticholinergic effects. Caution in patients with underlying glaucoma or those predisposed to urinary retention, QT prolongation. Can cause extrapyramidal side effects (dystonic reaction, akathisia, parkinsonism, tardive dyskinesia). Avoid in Parkinson's disease & note multiple drug interactions. May lower seizure threshold. Avoid IV administration	Vertigo PO 25mg 4hrly OR IM 12.5-25mg stat, then Δ to PO Palliative care PO 12.5mg-25mg 12hrly Continuous subcutaneous infusion (if sufficiently dilute) 25mg/24hrs Maximum of 100mg/24hrs *Refer Pall Care Guidelines/Advice

Benzo-diazepines				
Drug / F1	Pregnancy Category	MOA / Indications	Side Effects	Dose
Diazepam F1 restricted	Category C	GABA receptor agonists. Anxiolytic, sedative, muscle relaxant and anti-convulsant effects. Useful in chemotherapy or palliative care related N&V. Low dose Benzodiazepines useful in cyclical vomiting. PONV and N&V due to opioids. They are useful anxiolytics, and for short term treatment of insomnia	Sedation, tolerance, dependence and dizziness. Caution when in combination with drugs that cause CNS and respiratory depression. Consider lower starting dose in elderly and severe renal impairment. Contraindicated in severe hepatic impairment.	Vertigo (Diazepam) PO 5mg 8hrly Cyclical Vomiting (Diazepam) IV 2.5mg-5mg stat
Lorazepam F1 restricted				CINV (Lorazepam) See treatment protocol OR PO 0.5mg-2mg 12hrly
Midazolam F1 unrestricted				Cyclical Vomiting (Midazolam) IV 0.5mg-2mg stat (consider low dose infusion)

Corticosteroids				
Drug / F1	Pregnancy / BF	MOA / Indications	Side Effects	Dose
Dexamethasone F1 unrestricted	Category C Pregnancy - considered safe. Use lowest effective dose for the shortest possible time. BF - limited data, consider alternate corticosteroid	Synthetic adrenocorticosteroid with glucocorticoid activity, very little mineralocorticoid activity. Anti-inflammatory and immunosuppressant activity. Useful with cytotoxic drugs, PONV, N&V due to bowel obstruction or raised intracranial pressure.	Mood or sleep disturbance, adrenocortical suppression, hyperglycaemia, peptic ulcer Caution in sepsis, haematological malignancies, diabetes, and systemic fungal infections.	Nausea & Vomiting PO/IM/IV 2mg-8mg single dose or up to 8hrly if recurrent vomiting Seek senior advice

Dopamine antagonists				
Drug & F1	Pregnancy / BF	MOA / Indications	Side Effects	Dose
Chlorpromazine F1 restricted (Intractable migraine)	Category D Pregnancy - limited data BF - limited data, small amounts of antipsychotics pass into breast milk	Actions include major tranquiliser, anti-psychotic, dopamine inhibitor, alpha-adrenergic blockade (cause hypotension), may elevate serum glucose. Indicated for functional psychosis, agitation, depression, behavioural disturbance, palliative care, and intractable hiccough. Widely used as an adjunct in treatment of migraines in ED.	Sedation, hypotension, anticholinergics effects, QT prolongation, extrapyramidal side effects (dystonic reaction, akathisia, parkinsonism, tardive dyskinesia). Avoid in Parkinson's Disease May lower seizure threshold. Avoid in Pregnancy	Migraine IV 12.5 mg in NaCl 0.9% 1Lt over 30 minutes. If needed, repeat infusion once, 30 minutes after preceding infusion ends Maximum of 37.5mg/24hrs To avoid hypotension, pre-treat with NaCl 0.9% 500mL. Monitor blood pressure and fluid status every 30 minutes during treatment
Droperidol F1 restricted (2nd line therapy PONV)	**Category C** **Pregnancy - limited data** **Breast Feeding (BF) - limited data suggests small amounts of antipsychotics pass into breast milk.**	Dopamine antagonist, with antipsychotic & antiemetic properties. Use for N&V refractory to other antiemetics, opioid induced, anxious, or agitated patients, produces sedation in higher doses.	Sedation (especially with higher doses), QT prolongation, extrapyramidal side effects (dystonic reaction, akathisia, parkinsonism, tardive dyskinesia) Avoid in Parkinson's Disease. May reduce seizure threshold.	PONV IV 0.25mg – 1.25mg for nausea, up to 2.5mg IV 8hrly PRN for vertigo.
Metoclopra-mide F1 unrestricted	**Category A** Pregnancy - safe to use BF - safe to use s	Metoclopramide has gastric pro-kinetic effects and dopamine antagonist activity Use for migraine (in combination with paracetamol), acute gastroenteritis. Considered the safest antiemetic in pregnancy, may be useful in diabetic gastroparesis.	Can cause extrapyramidal side effects (dystonic reaction, akathisia, parkinsonism, tardive dyskinesia). Avoid in Parkinson's Disease & young patients <20yrs Avoid in bowel obstruction or perforation/resection due to its pro-kinetic activity. Short term use only (5 days) risk of tardive dyskinesia increases with cumulative dose and length of treatment	All Indications PO/IM/IV 10mg 8hrly Maximum daily dose should not exceed 0.5 mg/kg or 30 mg (whichever is less) Palliative care Continuous subcutaneous infusion 30mg/24hrs *Refer Pall Care Guidelines/Advice – dosage may be altered by Senior Clinician.
Prochlorpera-zine F1 unrestricted	Category C Pregnancy - safe to use in early pregnancy. In late pregnancy there is a risk of neurological disturbance in infant BF - safe to use	Acts on several neurotransmitter systems, anti-dopamine, alpha-adrenoreceptor antagonism, potentiation of noradrenaline, weak anti-cholinergic action, weak antihistamine action, weak serotonin antagonism. Use for N&V due to migraine, vertigo due to Meniere's, motion sickness, labyrinthitis or acute gastroenteritis (2nd line).	Sedation, long QT, extrapyramidal side effects (dystonic reaction, akathisia, parkinsonism, tardive dyskinesia). Avoid in Parkinson's Disease May lower seizure threshold. May cause constipation, blurred vision and hypotension.	Vertigo PO 5-10mg 6-8hrly **OR** IM 12.5mg stat, then Δ to PO (Treat for ≤2 days) Migraine PO 20mg stat followed by 10mg 2 hours later OR 5mg-10mg 8hrly Gastroenteritis PO 20mg stat OR 5-10mg 6-8hrly IM/IV(slow) 12.5mg 8hrly Pregnancy PO 5mg-10mg 6-8hrly **OR** IM/IV(slow) 12.5mg 8hrly

Dopamine antagonists				
Drug & F1	Pregnancy / BF	MOA / Indications	Side Effects	Dose
Domperidone F1 unrestricted	Category B2 Pregnancy - avoid use BF - safe to use	Antiemetic due to pro-kinesis and central dopamine antagonism in the chemo-receptor trigger zone (CTZ). Indicated for short term treatment of gastroparesis (idiopathic or diabetic) and for intractable N&V from any cause. Commonly prescribed for Oncology patients. Antiemetic properties similar to metoclopramide; however, it does not readily cross the blood brain barrier. Rarely causes extra-pyramidal side effects but does increase prolactin levels.	Dry mouth, headache, hyperprolactinaemia, rash, insomnia, prolonged QT interval. Avoid in prolactinoma Contraindicated in mod-severe hepatic impairment Caution with other CYP34A inhibitors. Short term use for nausea and vomiting (≤7 days)	Nausea & Vomiting PO 10mg 8hrly Maximum of 30mg/24hrs.

Atypical Anti-Psychotic				
Drug / F1	Pregnancy / BF	MOA / Indications	Side Effects	Dose
Olanzapine F1 restricted (Chemotherapy Induced Vomiting (CINV) and palliative care)	Category C Pregnancy - limited data BF - limited data, small amounts of antipsychotics pass into breast milk	Atypical antipsychotic, antimanic, mood stabilising agent with a broad profile. Affinities for dopamine, cholinergic muscarinic, alpha! Adrenergic and antihistamine receptors. Used for Palliative Care and in N&V due to Chemotherapy.	Sedation, hypotension, anticholinergic effects (caution in patients with underlying glaucoma or those predisposed to urinary retention), QT prolongation, extrapyramidal side effects (dystonic reaction, akathisia, parkinsonism, tardive dyskinesia). Avoid in Parkinson's Disease May lower seizure threshold	Palliative care PO/subling 2.5mg-5mg 12hrly *Refer Pall Care Guidelines/Advice Chemotherapy See treatment protocol OR PO/subling 5-10mg 12hrly Elderly, renal or hepatic impairment start PO 2.5mg-5mg once daily

5-HT_3 receptor antagonists				
Drug / F1	Pregnancy / BF	MOA / Indications	Side Effects	Dose
Ondansetron F1 unrestricted	Category B1 Pregnancy - may be used for nausea and vomiting if other drugs are inadequate (3rd line) BF - No data available, although 1 or 2 doses after delivery should not be a concern	5-HT_3 receptor-antagonist. Antagonises presynaptic 5-HT_3 receptors at peripheral receptors in the GIT and, to a lesser extent, the CNS. Official (PBS) indications are for emetogenic chemotherapy, radiotherapy and PONV, although it is widely used in many other circumstances.	Headache is common, constipation, QT prolongation (caution if coexistent hypokalaemia, hypomagnesaemia or hypocalcaemia, risk of serotonin toxicity in combination with other serotonergic agents.	All Indications PO/IV 4mg-8mg 8hrly Maximum of 20mg/24hrs (Consider reducing maximum dose If patient >75years) Do not exceed 8mg/24hrs in severe hepatic impairment

Other				
Drug / F1	Pregnancy Category	MOA / Indications	Side Effects	Dose
Capsaicin 0.075% Cream F1 unrestricted	Data not available	Acts via sensory nerve blockade through substance P depletion. Used topically for arthritis pain or post herpetic neuralgia. Off label use for cannabis hyperemesis syndrome (has limited evidence)	Avoid in broken skin, oral, ocular or other sensitive mucosa.	Cannabis hyperemesis syndrome TOPICAL - Apply to the abdomen 12hrly
Clonidine F1 unrestricted	Category B3	Central alpha$_2$ agonist. At low doses, clonidine is can reduce nausea. It is also commonly used for post operative pain and to reduce opioid consumption.	Caution in bradycardias, sick sinus or high AV block. May cause sedation and variable effects of hypotension. Dizziness is common	Cyclical Vomiting IV 15microg – 60microg stat

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Review panel.	**SCGH Emergency Medicine & Pharmacy -** **Created by Dr Chantelle Badawy; Review by Dr Tony Celenza; Monique Cook (Senior Pharmacist); Dr Katherine Jutsum; Dr Ioana Vlad, Dr Anil Tandon (Palliative Care)** **This guideline was written exclusively for adult patients for use by SCGH ED staff only.** **The authors do not support its use outside of the department.** **We recommend that practitioners refer to local departmental guidelines.**