10.3. Appendix 3: Medication management

10.3.1. Appendix 3.1: General prescribing principles

General prescribing principles for nausea and vomiting in pregnancy and hyperemesis gravidarum	
Vitamin and mineral supplements	Cease multivitamins and iron supplements. Maintain iodine and folate supplements. Increase folate to 5 mg orally each day if prescribing corticosteroids in first trimester.
Effective dosing	If an antiemetic is *ineffective* at maximal dose, discontinue before commencing an alternative agent. If an antiemetic is *partially effective*, optimise dosage and timing, only add additional agents after maximal doses of the first agent have been trialled.
Experimental treatments for nausea and vomiting	Must not be used outside of a clinical trial setting, this includes gabapentin and mirtazapine.
Supply of medications	Most of the recommended medicines for nausea and vomiting in hyperemesis gravidarum are considered 'off-label' use, therefore private prescriptions and informed consent of the patient are required. Provide an appropriate number of repeat prescriptions to ensure adequate supply until the next clinical review. **Private patients:** Patients seen privately will have to source the medicine from a community pharmacy. **Outpatient supply:** Women seen in outpatient clinics may be able to source medicine supply from the hospital pharmacy (where available) and charged an outpatient co-payment for the medicine, as per the NSW Health Policy Directive *Outpatient Pharmaceutical Arrangements and Safety Net Arrangements* (PD2022_017). Approval to do this must be sought from the Drug and Therapeutics Committee by the treating clinician. **Inpatient supply:** Women admitted to hospital will be supplied all medicines from the hospital pharmacy during their inpatient stay. Continued supply after discharge may be able to be sourced by the hospital pharmacy, however this may require approval from the Drug and Therapeutics Committee after an application by the treating clinician is made. When prescribing any medicine used 'off-label' or for an 'unapproved use', follow the protocols and procedures implemented for 'off-label use' of medicines by the local Drug and Therapeutics Committee, as per *Medication Handling in NSW Public Health Facilities* (PD2013_043). Informed consent from the patient is required for medicines used off-label or unapproved indications.

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10.3.2. Appendix 3.2: Prescribing summary

	Mild PUQE-24 = <7	Moderate PUQE-24 = 7 to 12	Severe (PUQE-24 = ≥13) or hyperemesis gravidarum – Outpatient management	Refractory symptoms or in hospital
Antiemetics and corticosteroids (see 10.3.3)	• ginger and/or • pyridoxine (vitamin B6)	One of the following: • doxylamine (plus pyridoxine) • metoclopramide • prochlorperazine • promethazine • diphenhydramine or • ondansetron (plus laxative/s)	• ondansetron (plus laxative/s) **And consider night-time dosing with either:** • doxylamine (plus pyridoxine) or • cyclizine or • metoclopramide or • promethazine or • prochlorperazine **If significant symptoms persist:** • consider corticosteroids: prednisone/prednisolone or methylprednisolone or hydrocortisone • consider droperidol	As for severe nausea and vomiting in pregnancy or hyperemesis gravidarum Convert to parenteral treatment if not tolerating oral Convert back to oral equivalent when suitable
Laxatives	Docusate 120mg oral once or twice a day[3] and/or macrogol oral once or twice a day[3] and/or lactulose 15 to 30mL oral once or twice a day[3]			
Acid suppression (see 10.3.4)	-	H2 antagonist: • famotidine or • nizatadine (if unavailable use a proton pump inhibitor)	Cease H2 antagonist and commence proton pump inhibitor: • esomeprazole or rabeprazole or omeprazole or lansoprazole	Continue proton pump inhibitor IV if oral not tolerated: • esomeprazole or pantoprazole or omeprazole
Intravenous (IV) therapy (see 10.3.5)	-	IV fluids 1 to 3 times per week as required Add IV thiamine if poor oral intake or administering glucose		Continuous IV fluid and electrolyte replacement - add IV thiamine if poor oral intake or administering glucose
Additional therapies	-	-	Consider enteral nutrition VTE prophylaxis if indicated	Consider enteral or total parenteral nutrition **AND** VTE prophylaxis if indicated

10.3.3. Appendix 3.3: Antiemetics and corticosteroids

Medication	Oral dose	Parenteral dose	Potential risks	Practice points
Mild Symptoms				
Ginger	200 mg to 600 mg, every 8 hours Maximum dose of 1800 mg in 24 hours[3]	-	No increase in congenital malformation Heartburn	Standardised products preferable to foods Available over the counter
Pyridoxine -Vitamin B6	10 mg to 50 mg, every 6 hours Maximum dose of 200 mg in 24 hours[3]	-	No increase in congenital malformation Sensory neuropathy has been reported with chronic intake of pyridoxine at doses >500 mg/day	More effective when used in combination with doxylamine Available over the counter
First Line				
Doxylamine	6.25 mg to 25 mg, at night, increase to every 8 hours if required Maximum dose of 50 mg in 24 hours[3]	-	No increased risk of congenital malformations Sedation, anticholinergic effects	Marketed as an over the counter sleeping tablet but has good antiemetic properties Night-time only dosing recommended Only one antihistamine medication should be used at a time
Cyclizine	12.5 mg to 50 mg, at night, increase to every 8 hours if required Maximum dose of 150 mg in 24 hours[3]	50 mg slow IV, every 8 to 12 hours Maximum dose of 150 mg in 24 hours[3]	No increased risk of congenital malformations Sedation, anticholinergic effects	Small quantities available over the counter Night-time only dosing recommended Only one antihistamine medication should be used at a time
Diphenhydramine	25 mg to 50 mg, at night, increase to every 8 hours if required. Maximum dose of 150 mg in 24 hours[7]	-	No increased risk of congenital malformations Sedation, anticholinergic effects	Night-time only dosing recommended Only one antihistamine medication should be used at a time

Medication	Oral dose	Parenteral dose	Potential risks	Practice points
Metoclopramide	10 mg, every 8 hours Maximum dose of 30 mg in 24 hours[8]	10 mg IV/IM/subcut, every 8 hours Maximum 30 mg in 24 hours If IV – inject over at least 3 minutes[8]	No increased risk of congenital malformations Sedation, anticholinergic effects, depression Rare: extrapyramidal side effects, tardive dyskinesia	Due to the risk of extrapyramidal side-effects with metoclopramide, it should be used with caution and only for short-term use: • maximum 5 days **and** • maximum dose of 30 mg in 24 hours or 0.5 mg/kg body weight in 24 hours Where longer-term pharmacotherapy treatment is required, alternative medications are preferable Subcut or IV infusion may be considered as an option in a Hospital in the Home (HiTH) setting
Promethazine	25 mg, every 8 hours Maximum dose of 75 mg in 24 hours[3]	25 mg IM, every 6 to 8 hours Maximum dose of 100 mg in 24 hours[3]	No increased risk of congenital malformations Sedation, anticholinergic effects	Night-time only dosing recommended Only one antihistamine medication should be used at a time
Prochlorperazine	5 mg to 10 mg, every 8 hours Maximum dose of 30 mg in 24 hours[8]	12.5 mg IM/IV, every 8 hours as required Maximum dose of 37.5 mg in 24 hours[8]	No increased risk of congenital malformations Sedation, anticholinergic effects Rare: extrapyramidal side effects, tardive dyskinesia	Avoid high doses close to birth due to potential for withdrawal symptoms including sedation, poor sucking and feeding difficulties Night-time only dosing recommended

Medication	Oral dose	Parenteral dose	Potential risks	Practice points
Second Line				
Ondansetron	4 mg to 8 mg, every 8 to 12 hours Maximum dose of 16 mg in 24 hours[9]	4 mg to 8 mg IV, every 8 to 12 hours Maximum dose of 16 mg in 24 hours[9]	No overall increase in major congenital malformation. Data is conflicting but there may be an additional 3 in 10,000 risk of orofacial clefts and 3 in 1,000 risk of ventricular septal defect[10] Avoid in women with pre-existing cardiac QT prolongation	Best for daytime use to minimise sedating antiemetics Risk of severe dose-related constipation- always prescribe concurrent laxatives Subcut infusion may be considered as an option in a Hospital in the Home (HiTH) setting Only to be used prior to 10 weeks gestation if the benefits outweigh the potential risk
Third Line				
Prednisone / Prednisolone	40 mg to 50 mg once per day, weaning over 7 to 10 days[3] – see practice points	-	No overall increase in major congenital malformation. Data is conflicting but there may be an additional risk of orofacial clefts when used before 10 weeks gestation. Chronic use: potential Cushing's syndrome, mood disturbance, hypertension, hyperglycaemia, preterm rupture of membranes and preterm delivery	Wean to 10 to 12.5 mg/day over 7 to 10 days then by 2.5 mg/day every 3 days to minimum effective dose. Increase folate to 5 mg, oral, once per day if prescribing steroids in first trimester
Methylprednisolone	-	16 mg IV, every 8 hours for 48 to 72 hours Maximum dose 48 mg in 24 hours[3]		Once clinical improvement occurs switch to oral prednisone/prednisolone Increase folate to 5 mg, oral, once per day if prescribing steroids in first trimester
Hydrocortisone	-	100 mg IV, every 12 hours for 48 to 72 hours Maximum dose 200 mg in 24 hours[3]		

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Medication	Oral dose	Parenteral dose	Potential risks	Practice points
Droperidol	-	500 micrograms IV infusion over 20 mins, every 6 hours as required Maximum dose of 2 mg in 24 hours[11]	No increased risk of congenital malformations Sedation, anticholinergic effects Has been associated with QT prolongation and/or torsades de pointes when used in doses higher than those typically used for treatment of nausea and vomiting[7]	Avoid high doses close to birth due to potential for withdrawal symptoms including sedation, poor sucking and feeding difficulties This medication is rarely used in pregnancy and should be only used when other treatments options have failed due to severe sedation

IM – Intramuscular / IV – Intravenous / Subcut – Subcutaneous

10.3.4. Appendix 3.4: Acid suppression medications

Medication	Oral dose	Parenteral dose	Potential risks	Practice points
First line - Antacids				
Antacids containing magnesium, calcium or aluminium	As required for mild symptoms	-	No increase in congenital malformations	Constipation or diarrhoea in high doses
Second line - H2 antagonists				
Famotidine	20 mg once or twice a day[8]	-	No increase in congenital malformation	Well tolerated Famotidine is safe to use; there is much less experience with nizatidine[8]
Nizatidine	150 mg once or twice a day[8]			
Third line - Proton-pump inhibitors				
Omeprazole	20 mg once or twice a day[8]	40 mg IV once a day[8]	No increase in congenital malformations	Well tolerated Change from IV to oral treatment as soon as possible[8]
Lansoprazole	30 mg once or twice a day[8]	-		
Rabeprazole	20 mg once or twice a day[8]			
Esomeprazole	20 mg once or twice a day[8]	20 mg IV once or twice a day[8]		
Pantoprazole	40 mg once or twice a day[8]	40 mg IV once or twice a day[8]		

IV – Intravenous