Guideline

Nausea and Vomiting in Pregnancy and Hyperemesis Gravidarum

Summary This Guideline provides evidenced-based guidance to support consistency of practice, decision-making and care coordination for the diagnosis and management of nausea and vomiting in pregnancy and hyperemesis gravidarum. This Guideline applies to NSW Health and non-NSW Health clinicians (such as general practitioners) who provide care to pregnant women.

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NSW Health

GUIDELINE

Nausea and Vomiting in Pregnancy and Hyperemesis Gravidarum

GUIDELINE SUMMARY

Nausea and vomiting in pregnancy and hyperemesis gravidarum can cause significant emotional, psychological, physical and financial distress for women and their families.

This Guideline provides evidenced-based guidance to support consistency of practice, decision-making and care coordination for the diagnosis and management of nausea and vomiting in pregnancy and hyperemesis gravidarum.

This Guideline applies to NSW Health and non-NSW Health clinicians (such as general practitioners) who provide care to pregnant women.

KEY PRINCIPLES

This Guideline reflects evidence based best clinical practice and expert consensus opinion to standardise the diagnosis and management of nausea and vomiting in pregnancy and hyperemesis gravidarum.

The Guideline provides recommendations for the care of priority populations including the care of Aboriginal and/or Torres Strait Islander families, culturally and linguistically diverse families and care of LGBTIQ+ people.

Comprehensive assessment, including the Pregnancy Unique Quantification of Emesis (PUQE-24) scoring index, will assist with defining the severity of illness and to guide care pathways which promote community and ambulatory care settings.

Holistic and multidisciplinary care must consider the woman's social and emotional wellbeing. Individual care plans are to be developed in partnership with the woman and must include advice on how to adjust treatment if symptoms improve, fluctuate or deteriorate, and how to access care if required.

Continuity of care models, including access to specialist care, must be developed to support women accessing care closer to home. This may include community or ambulatory care for women with mild to moderate severity; Hospital in the Home for women with more severe symptoms; and virtual care as appropriate.

Transfer of care between maternity services and community-based services is to be coordinated, ensuring that women receive consistent information, assessment, management, treatment, and continuity of care.

Pre-conception support, counselling and early or pre-emptive treatment, including an early pregnancy booking, is to be offered to women who have experienced hyperemesis gravidarum in a previous pregnancy.

Local Health Districts and Specialty Health Networks must ensure:

- implementation of this Guideline
- relevant staff receive education and training based on this Guideline
- local protocols or operating procedures are in place and consistent with this Guideline
- monitoring of practice.

REVISION HISTORY

Version	Approved By	Amendment Notes
GL2022_009 July-2022	Deputy Secretary, Health System Strategy and Planning	New Guideline

CONTENTS

1. BACKGROUND

Nausea and vomiting in pregnancy is estimated to occur in 69 per cent of pregnancies[1]. Hyperemesis gravidarum is a severe form of nausea and vomiting in pregnancy that affects approximately 1.1 per cent of pregnancies and is the main cause of hospitalisation in the first half of pregnancy[1]. Hyperemesis gravidarum can cause significant emotional, psychological, physical and financial distress for women and their families.

The onset of nausea and vomiting in pregnancy and hyperemesis gravidarum typically occurs between the 4th and 10th week of pregnancy, with most symptoms resolved between 16 and 20 weeks. For some women, symptoms continue beyond 20 weeks, with some women experiencing symptoms until they give birth[1]. The risk of recurrence of nausea and vomiting and hyperemesis gravidarum in subsequent pregnancies is very high.

1.1. About this document

This Guideline applies to NSW Health and non-NSW Health clinicians (such as general practitioners) who provide care to pregnant women. Care settings may include community care (such as general practice), ambulatory care (such as Early Pregnancy Assessment Service, Pregnancy Day Stay Units), Emergency Departments, inpatient settings, Hospital in the Home and virtual care.

This Guideline provides clinicians with a guide for the holistic care, assessment and treatment of women who experience nausea and vomiting in pregnancy and hyperemesis gravidarum. The Guideline encourages that all women with nausea and vomiting in pregnancy and hyperemesis gravidarum are provided with individualised care. This care must be designed in collaboration with the woman. A care plan template is provided in Appendix 4. This Guideline endorses the Pregnancy-Unique Quantification of Emesis (PUQE-24) scoring system (Table 1). The PUQE-24 guides the definition of severity, a treatment and management algorithm sensitised to the PUQE-24 score and care pathways to promote community and ambulatory care settings.

This Guideline is intended as a guide only and does not equate to individual patient advice. Interpretation of the recommendations must always be taken in context with the patient's current condition and formal clinical assessment.

While the information in this Guideline is considered to be true and correct at the time of publication, changes in circumstances after the time of publication may impact on the accuracy of the information.

1.2. Key definitions

Hyperemesis Gravidarum	Hyperemesis gravidarum is a severe form of nausea and vomiting in pregnancy and is defined by the following features: • symptoms start in early pregnancy, before a gestational age of 16 weeks • characterised by severe nausea and/or vomiting • inability to eat and/or drink normally • strongly limits daily activities • some women may show signs of dehydration and/or electrolyte abnormalities[2].
Holistic Care	Supports the whole person, considering their physical, emotional, social, mental and spiritual wellbeing.
Nausea and Vomiting in Pregnancy	Generally defined as nausea, vomiting and/or dry retching, commencing in early pregnancy, without another cause and is not classified as hyperemesis gravidarum.
Pregnancy-Unique Quantification of Emesis (PUQE-24) scoring system	A validated scoring system to classify the severity of nausea and vomiting in pregnancy. The PUQE-24 scoring system assesses the severity of nausea and vomiting over a 24-hour period, with three questions relating to duration of nausea, frequency of vomiting and dry retching symptoms[2].

1.3. Related NSW Health documents

This Guideline should be read in conjunction with:

Reference	Title
PD2013_043	Medication Handling in NSW Public Health Facilities
PD2016_033	Approval Process of Medications for Use in NSW Public Hospitals
PD2017_044	Interpreters – Standard Procedures for Working with Health Care Interpreters
GL2019_008	Communicating Positively: A Guide to Appropriate Aboriginal Terminology
PD2019_057	Prevention of Venous Thromboembolism
PD2020_014	Tiered Networking Arrangements for Perinatal Care in NSW
PD2020_018	Recognition and management of patients who are deteriorating

Reference	Title
PD2021_018	Framework for Termination of Pregnancy in New South Wales
PD2022_017	Pharmaceutical and Safety Net Arrangements for Outpatients and Patients on Discharge

2. MEETING THE NEEDS OF PRIORITY POPULATIONS

Providing and enabling access to consistent, integrated and continuous care is important for all women, especially for marginalised groups of women.

2.1. Care of Aboriginal and/or Torres Strait Islander families

It is recommended that all care providers:

- build strong relationships and work in partnership with Aboriginal women, women having an Aboriginal baby and their families to support their engagement with services and share their health history and concerns
- are aware that Aboriginal people and women in particular, have additional priorities such as extended family, community and/or cultural obligations and may prioritise those over their own health needs
- provide culturally safe care and understand that some Aboriginal people continue to have mistrust in health services due to the ongoing impacts of colonisation and intergenerational trauma
- ensure that Aboriginal families are offered referral to appropriate services such as Aboriginal Health Workers for cultural support.

2.2. Care of Culturally and Linguistically Diverse families

It is recommended that all care providers:

- use interpreter services for all women where English is not their first language in-line with the NSW Health Policy Directive *Interpreters – Standard Procedures for Working with Health Care Interpreters* (PD2017_044)
- provide written information in the preferred language of the woman (where available)
- use additional services, such as multicultural liaison officers, to support and inform families.

2.3. Care of LGBTIQ+ people

It is recommended that all care providers:

- create an environment where the person can share what language best describes themselves, their health care experiences and needs, relationships and family or support network

- use appropriate pronouns, language and terminology about bodies, sexuality, gender and intersex variations as this supports recognition, trust and safety.

3. ASSESSMENT AND INVESTIGATIONS

A flowchart is available for the assessment and management of nausea and vomiting in pregnancy and hyperemesis gravidarum, see Appendix 1.

3.1. Assessment

3.1.1. Nausea and vomiting assessment

It is recommended that all women are asked about nausea and vomiting in pregnancy at each pregnancy visit between 4 and 16 weeks gestation.

If nausea and vomiting are present, assess and classify the woman's symptom severity using the PUQE-24 scoring system (Table 1). Further assessment should also include questions about the woman's quality of life and wellbeing over the last few weeks and fluid and food intake.

For women with a PUQE-24 score of 13 and above, refer to a consultant obstetrician, GP obstetrician and/or physicians with experience in management of severe nausea and vomiting/hyperemesis gravidarum, via an established escalation pathway.

Escalation is to follow existing local guidance as per Clinical Emergency Response System, in line with the NSW Health Policy Directive *Recognition and management of patients who are deteriorating* (PD2020_018) and NSW Health Policy Directive *Tiered Networking Arrangements for Perinatal Care in NSW* (PD2020_014).

Table 1 – Motherisk PUQE-24 scoring system[3]

Motherisk PUQE-24 scoring system				
1. In the last 24 hours, how long have you felt nauseated or sick to your stomach?				
Not at all (1)	1 hour or less (2)	2-3 hours (3)	4-6 hours (4)	More than 6 hours (5)
2. In the last 24 hours, have you vomited or thrown up?				
I did not vomit (1)	1-2 times (2)	3-4 times (3)	5-6 times (4)	7 or more times (5)
3. In the last 24 hours, how many times have you had retching or dry heaves without throwing up?				
None (1)	1-2 times (2)	3-4 times (3)	5-6 times (4)	7 or more times (5)
Mild: 4 - 6		**Moderate: 7 - 12**		**Severe: ≥ 13**

3.1.2. Psychosocial screening

Psychosocial screening and completion of the Edinburgh Postnatal Depression Scale is recommended for women who present with mild, moderate or severe nausea and/or vomiting

in pregnancy or hyperemesis gravidarum (PUQE-24 score of ≥4). Psychosocial screening should be repeated as necessary.

The results must be shared with the woman's primary care team, with consent. To ensure appropriate psychosocial support, referrals must be made to local infant perinatal health services, Mental Health Line, SAFE START, local community mental health team, community-managed organisation provider and/or general practitioner as required.

3.1.3. Physical examination

Comprehensive physical examination, including weight measurement and hydration status is required to identify the severity of illness. Alternate diagnoses, such as infection (particularly urinary tract or gastroenteritis) or surgical causes must be considered, see Appendix 2 for a list of differential diagnoses[3].

3.1.4. Venous Thromboembolism (VTE) risk assessment

A maternal VTE risk assessment must be completed during all antenatal admissions or when the clinical condition alters.

For women who are immobile or who have additional risk factors, consider thromboprophylaxis, in line with the NSW Health Policy Directive *Prevention of Venous Thromboembolism* (PD2019_057). Thromboprophylaxis can be discontinued as activity levels normalise.

3.1.5. Comprehensive antenatal care assessment

Women diagnosed with hyperemesis gravidarum require an early referral to their chosen maternity care provider for their first comprehensive antenatal assessment. This will enable a comprehensive medical and pregnancy history and psychosocial screening to be undertaken as well as any early multidisciplinary referrals.

3.2. Investigations

3.2.1. Mild-moderate nausea and vomiting in pregnancy

No additional investigations are required for women with a PUQE score ≤12 and if they are not suspected of having hyperemesis gravidarum or a differential diagnosis (see Appendix 2).

3.2.2. Severe nausea and vomiting in pregnancy

The investigations in Table 2 are recommended at the first presentation for all women with severe nausea and vomiting in pregnancy (PUQE score ≥13 or suspected hyperemesis gravidarum).

Table 2 – Investigations for severe nausea and vomiting

Indication	Investigations	Notes
Severe nausea and vomiting (PUQE score ≥13 or suspected hyperemesis gravidarum)	Pathology • EUC (sodium, potassium, chloride, bicarbonate, urea, creatinine) • CMP (calcium, magnesium, phosphate) • LFTs (bilirubin, alanine transaminase [ALT], aspartate aminotransferase [AST], albumin)	If requiring IV fluids for more than 24 hours – repeat electrolytes daily
	Obstetric ultrasound	Women with multiple pregnancy or gestational trophoblastic disease have an increased incidence of hyperemesis gravidarum
Nausea and vomiting unresponsive to treatment	Thyroid-stimulating hormone (TSH)	-
Signs and/or symptoms of thyrotoxicosis (heat intolerance, palpitations, new anxiety, tremor, weight loss or lid lag)		TSH <0.25 mIU/L is suggestive of thyrotoxicosis
Signs or symptoms of urinary tract infection	Midstream urine - microscopy and culture, including white cell count	White cell count is raised in pregnancy; up to 12.0x109/l. is normal

Note:

- Beta human chorionic gonadotrophin (hCG) measurement is of **no** practical value for diagnosing or managing hyperemesis gravidarum.
- Ketonuria is **not** reliably associated with either the diagnosis or severity of hyperemesis gravidarum[4].

3.2.3. Fetal growth surveillance

Third trimester fetal growth surveillance is recommended when persistent nausea and vomiting or hyperemesis gravidarum continues beyond 16 weeks. Consult with the Maternal-Fetal Medicine unit of the Tiered Perinatal Network if indicated.

4. COMPLICATIONS OF SEVERE HYPEREMESIS GRAVIDARUM

Complications of severe hyperemesis gravidarum can include the following:

- malnutrition and loss of muscle mass
- Mallory-Weiss tear
- hyponatraemia and hypokalaemia
- venous thromboembolism
- abnormal thyroid and liver function
- placental dysfunction – which may be associated with an increased risk of small for gestational age babies, preterm birth, preeclampsia and placental abruption
- dehydration and renal failure
- haemorrhoids
- dental enamel erosion
- adverse impact on mental health, family unit, ability to perform usual duties and paid work.

It is unclear if hyperemesis gravidarum is associated with an increased risk of stillbirth.

The management of these complications is beyond the scope of this document. Specific advice must be sought from relevant specialties.

5. HOLISTIC AND MULTIDISCIPLINARY CARE

Nausea and vomiting in pregnancy and hyperemesis gravidarum can seriously impact a woman's quality of life. It is important for care providers to validate and acknowledge the woman's physical symptoms and psychological distress. Appropriate and timely referrals can significantly improve maternal health and wellbeing, decrease maternal stressors in pregnancy and the early postnatal period and improve long term outcomes.

Women with severe nausea and vomiting in pregnancy or hyperemesis gravidarum may require input from a range of health professionals. Where services are not available or not locally accessible, use telehealth or virtual access.

The principles of holistic management of nausea and vomiting in pregnancy and hyperemesis gravidarum must include:

- interventions to reduce nausea, retching and vomiting
- management of associated gastric dysmotility, gastroesophageal reflux and constipation
- maintenance of hydration, fluid and electrolyte replacement
- maintenance of adequate nutrition including provision of vitamin supplements where required
- assessment and referral for psychosocial support
- monitoring and prevention of side effects and adverse pregnancy and fetal outcomes.

5.1. Non-pharmacological interventions

The success of non-pharmacological interventions for nausea and vomiting in pregnancy will depend on the woman's symptoms and severity. Interventions with published data include:

- changing activities to minimise tiredness and gain more rest
- changing dietary habits to maintain hydration and nutrition (for example, small amounts of well-tolerated food)
- oral ginger
- acupressure bands
- avoiding iron-containing preparations.

5.2. Pharmacological treatments

There is little high-quality evidence to support one treatment intervention over another. The timing of pharmacological treatments needs to reflect the woman's symptom pattern in the first instance. Monitor the woman to ensure a therapeutic effect is maintained.

Pharmacological management of nausea and vomiting in pregnancy and hyperemesis gravidarum may require a combination of treatments including: antiemetics, corticosteroids, gastric acid suppression, laxatives and other supplements, including vitamins.

Pharmacological treatment information:

- Prescribing principles including vitamin and mineral supplements, effective dosing, experimental treatments and supply of medications, refer to Appendix 3.1
- One-page prescribing summary, refer to Appendix 3.2
- Antiemetics and corticosteroids – doses, potential risks and practice points, refer to Appendix 3.3
- Acid suppression medications – doses, potential risks and practice points, refer to Appendix 3.4.

5.3. Intravenous hydration

Intravenous fluid and electrolyte replacement effectively treats dehydration, electrolyte imbalance and nausea and vomiting. Rapid administration is safe for most women unless there are contraindications such as heart failure.

Administration can occur within a variety of inpatient and outpatient settings. Clear local pathways are required for women to receive intravenous hydration in outpatient settings, including Hospital in the Home and community care. During outpatient management, women require regular review, at least every 1-2 weeks, by their lead clinician to ensure appropriate therapy adjustment.

Repeat and review the woman's electrolytes and liver function tests if vomiting is persistent or if repeated administration of intravenous therapy fluids is necessary. Glucose infusions are not recommended unless normal serum sodium levels are confirmed and thiamine has been

administered to reduce the risk of Wernicke's encephalopathy. Refer to Appendix 3.5 for more information.

5.4. Enteral and total parenteral nutrition

In severe cases, if other treatments have failed to control hyperemesis gravidarum, additional nutrition may be required to restore hydration, correct electrolyte imbalances and maintain nutrition. Options include:

- Enteral nutrition – the supply of nutrients directly to the gastrointestinal tract.
- Total parenteral nutrition – a method that bypasses the gastrointestinal tract, utilising a vein to provide nutrients.

Consultation and/or referral to a dietitian should occur if there is concern regarding the woman's nutritional intake and before considering enteral or parental nutrition.

Enteral nutrition may be provided in the woman's home or within a hospital setting, however enteral nutrition may not be tolerated by some women. The woman will require a multidisciplinary approach to care and oversight by an experienced team.

Total parenteral nutrition is a complex, high-risk intervention of last resort and will require hospital admission.

Women who receive enteral or total parenteral nutrition are at high risk of developing refeeding syndrome and need to be monitored closely with a slow introduction of supplementation.

5.5. Termination of pregnancy

Some women with hyperemesis gravidarum may seek a termination of pregnancy. The Hyperemesis Education and Research (HER) Foundation reports that 10% of pregnancies complicated by hyperemesis gravidarum end in termination in women who would not otherwise have chosen this[5]. Many of these women had not been offered the full range of treatments available[5].

It is important that the woman has all treatment options discussed and offered, including antiemetics, gastric acid suppression, laxatives, corticosteroids, enteral and/or parenteral feeding and psychological counselling. Adequate time must be given to the woman to inform her decision.

Care must be provided in line with NSW Health Policy Directive *Framework for Termination of Pregnancy in New South Wales* (PD2021_018). All women seeking a termination of pregnancy are to be offered counselling and appropriate and adequate information to make an informed choice.

6. CARE PLANNING AND SETTINGS

6.1. Care Planning

The development of an individual care plan is recommended to support consistency in assessment, diagnosis, management and treatment. Individual treatment options and advice

must be based on the woman's symptoms and severity, and reflect the woman's context, symptoms and preferences. The management algorithms (Appendix 1 and Appendix 3) may be used as a guide.

The care plan must:

- be developed in partnership with the woman
- be always kept with the woman
- be communicated with members of the treating team and documented in the health care record
- be updated when clinical or psychosocial conditions change
- provide access to continuity of care by a named carer where possible
- provide advice on how to adjust care if symptoms improve, fluctuate or deteriorate
- contain instructions on who to contact if symptoms become more severe
- clinical review arrangements and where this is to occur.

A care plan template is available at Appendix 4.

Maternity care providers must individualise antenatal care, including investigations. For example, when a woman cannot tolerate an oral glucose tolerance test, consider alternative assessments such as intermittent capillary blood-glucose monitoring or measurement of HbA1C.

6.2. Care settings

Care coordination needs to be woman-centred and multidisciplinary. Care provision may occur in hospital or non-inpatient settings depending on the woman's clinical needs and preferences. Advice provided by a clinician with relevant expertise is essential, irrespective of the care setting.

Where care is provided in non-inpatient settings, a clear clinical pathway is required to enable women to access timely care and bypass standard Emergency Department triage processes.

6.2.1. Care in the community

Community care, including care by general practitioners and community health providers, is recommended for women with:

- a PUQE-24 score less than or equal to 12 **and**
- no significant co-morbidity (for example type-1 diabetes and other high-risk conditions (e.g., short bowel syndrome) or those requiring essential oral medications (e.g., severe epilepsy, transplant recipients).

For women with a PUQE-24 score of 13 or above, community care alone may be insufficient.

It is recommended that women receiving care in the community have an updated and individualised management plan.

6.2.2. Ambulatory care

Ambulatory care models (such as Early Pregnancy Assessment Services and Day Assessment Units) can be used to provide treatments such as intravenous hydration and electrolyte replacement and antiemetic therapy adjustment (titration). These treatments are associated with reducing hospital readmission rates.

6.2.3. Admitted care

Admitted care may be provided in inpatient settings or Hospital in the Home. It is recommended that districts develop or augment existing services to provide care in the woman's home.

Inpatient management is required for women with a PUQE-24 score 13 or above who have:

- severe electrolyte disturbance – for example, potassium < 3.0mmol/L
- significant renal impairment or acute kidney injury - for example, creatinine > 90mmol/L
- concurrent significant co-morbidity – for example, Type-1 diabetes, severe epilepsy, transplant recipients, or others requiring essential medications
- malnutrition/continuing significant weight loss or starvation ketoacidosis despite therapy
- associated conditions requiring inpatient management – for example, infection, haematemesis.

An updated care plan is required before discharge from admitted care. The care plan must be updated in conjunction with the woman, communicated to all team members, and documented within the medical and hand-held record. See Appendix 4 for care plan template.

6.2.4. Other care locations

Where access to ambulatory care, care in the community, or Hospital in the Home is not available, other locations may be considered, including non-pregnancy day stay units with suitable facilities or Emergency Departments.

Consultation using virtual care may also be an option for women who may not be able to access appropriate care close to home.

7. POSTNATAL CARE AND TRANSITION OF CARE

Nausea and vomiting almost always resolves promptly after birth. The experience of protracted or severe nausea and vomiting in pregnancy or hyperemesis gravidarum often impact the woman's psychological and emotional wellbeing and the family unit. Women who experience these conditions are more likely to describe high levels of post-traumatic stress syndrome and associated negative outcomes[6].

It is recommended that postnatal care plans are developed during pregnancy in partnership with the woman and Child and Family Health services to ensure a seamless transfer of care

from maternity to community-based services if indicated. Community services may include Child and Family Health services, general practitioners, Perinatal and Infant Mental Health services and Aboriginal Child and Family Health services (Building Strong Foundations).

Postnatal care plans must be documented, accessible, and communicated to all care team members. Ensure the woman receives a copy.

8. PLANNING FOR NEXT PREGNANCY

8.1. Pre-conception counselling

The recurrence risk of nausea and vomiting in pregnancy and hyperemesis gravidarum is high but difficult to estimate. Women with more severe symptoms may be unwilling to consider a further pregnancy. Women who experienced severe nausea and vomiting in pregnancy or hyperemesis gravidarum will benefit from pre-conception support, counselling and early or pre-emptive treatment with antiemetic therapy.

Early dietary and lifestyle changes, either before or at the commencement of symptoms, may also benefit these women.

8.2. Antenatal care for subsequent pregnancies

It is recommended that the first comprehensive antenatal visit in subsequent pregnancies occurs as early as possible in the first trimester. This will enable a comprehensive medical and pregnancy history and psychosocial screening to be undertaken as well as any early multidisciplinary referrals.

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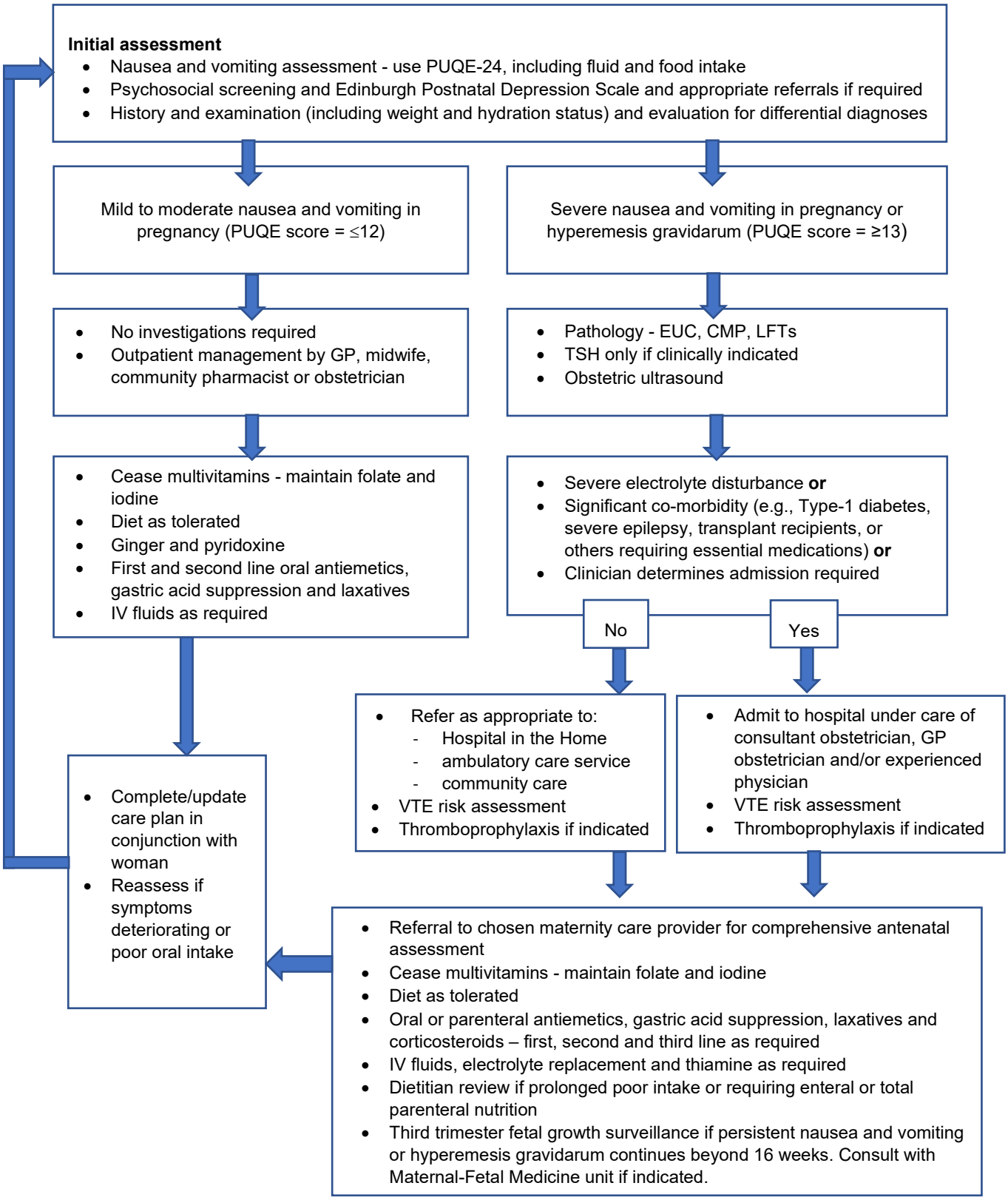
10. APPENDICES

10.1. Appendix 1: Assessment and management flowchart



10.2. Appendix 2: Differential diagnoses

Differential diagnoses of nausea and vomiting in pregnancy[3]		
	More common	**Less common**
Gastrointestinal	• Infectious gastroenteritis • Gastro-oesophageal reflux disease • Helicobacter pylori	• Infectious hepatitis • Pancreatitis • Biliary tract disease • Peptic ulcer disease • Bowel obstruction • Gastroparesis • Appendicitis • Peritonitis
Genitourinary	• Urinary tract infection, including pyelonephritis	• Ovarian torsion • Nephrolithiasis
Metabolic/toxic	• Drugs, including pregnancy vitamins	• Use and/or withdrawal of cannabinoids or other illicit drugs • Diabetic ketoacidosis • Addison's disease • Thyrotoxicosis • Non-infectious hepatitis • Hypercalcemia • Eating disorders
Central-nervous system disease	• Migraine	• Infection • Tumours • Raised intracranial pressure • Vestibular system pathology: labyrinthitis, Meniere's

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.

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]		

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

10.3.5. Appendix 3.5: Intravenous fluids and electrolytes

	Volume / rate	Practice points
Intravenous fluid		
0.9% sodium chloride **or** Hartmann's	1 to 2 L Initial rate at 1 L/hour	Further IV fluids should be given at a rate of 500-1000 mL/hour or slower to correct dehydration and electrolytes. Add IV thiamine (100 mg/day) if poor oral intake or administering intravenous glucose.
4% glucose and 0.18% sodium chloride **or** 5% glucose	1 L Initial rate at 500 mL/hour	Consider this option if the woman has had minimal oral intake, starvation or uncontrolled nausea and **only after correction of thiamine deficiency and exclusion of hyponatremia.** Add IV thiamine (100 mg/day) if poor oral intake or administering intravenous glucose.
Add electrolytes as required		
Potassium chloride	As per local guidelines	Potassium chloride is a high-risk medication – follow all local Guidelines and the Australian Injectable Drugs Handbook for management.
Magnesium sulphate	As per local guidelines	Magnesium sulphate is a high-risk medication – follow all local Guidelines and the Australian Injectable Drugs Handbook for management.

IV – Intravenous

10.4. Appendix 4: Care Plan Template

Care Plan Nausea and vomiting in pregnancy and Hyperemesis gravidarum	
Date: My care providers (names/roles/contact numbers): Next clinical review:	Patient label

My medications				
Medication	**Morning**	**Middle of day**	**Evening**	**Bedtime**
For nausea, vomiting or retching				
For stomach acid (reflux)				
For constipation				
Others (including vitamins and minerals)				

If I feel worse, I could try:

If I feel better, I could try:

Please complete before your next appointment
Eating and drinking: What makes it better or worse? How much are you having each day?
Family, friends and supports: What support do you have? Are your caregiving responsibilities being affected?
Work, study and social activities: Have you had to stop or reduce any activities?
Mood and sleep: How are you feeling? What is your sleep like?
Treatment and medications: Have any treatment or medication worked well for you?