AUCKLAND DISTRICT HEALTH BOARD
Te Toka Tumai

Hyperemesis in Gynaecology and Maternity Patients

Document Type	Guideline
Function	Clinical practice
Directorates	National Women's Health
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Patients affected (if applicable)	All women within National Women's Health
Staff members affected	All clinicians in National Women's Health including access holder lead maternity carers (LMCs)
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AUCKLAND DISTRICT HEALTH BOARD
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1. Purpose of guideline

The purpose of this guideline is to facilitate the safe and effective care of a patient with hyperemesis (gynaecology or maternity admission) within Auckland District Health Board (ADHB).

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2. Introduction

A condition where vomiting is persistent and subsequently interferes with fluid intake and nutrition status resulting in malnutrition and or weight loss, fluid, electrolyte and acid-base imbalance.

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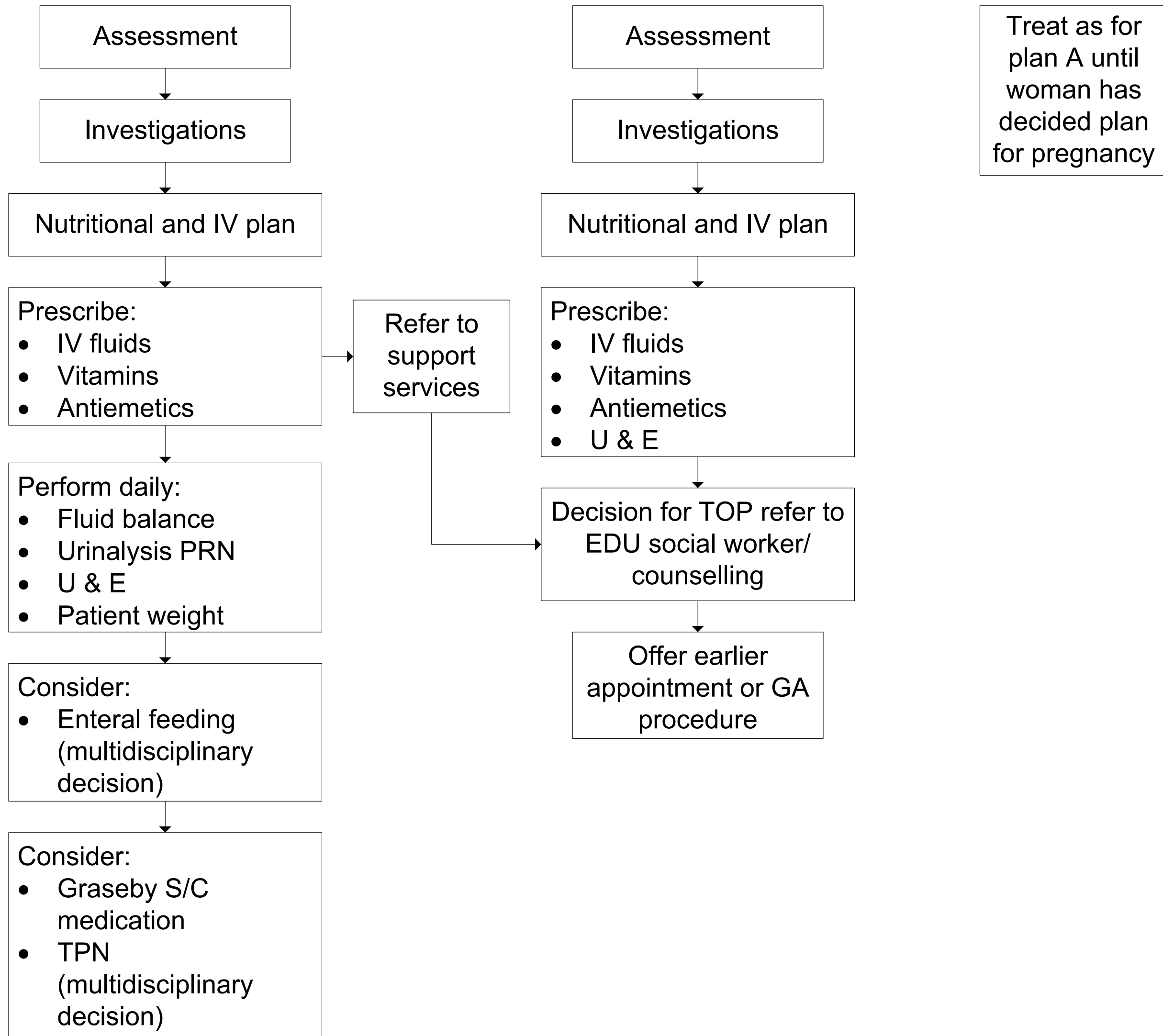
3. Flowchart: Summary of hyperemesis management

Please tick the appropriate box



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4. Admission process

Clinical assessment

- Triage for severity on WAU – if severe to stay on WAU for initial stabilisation and consultant review
- Assess nausea and vomiting, ptyalism - duration and amount
- Assess current weight and pre-pregnancy weight
- Assess urine output/ketones
- Assess JVP, dehydration and skin turgor
- Consider IV access and commencement of fluids
- Consider commencing anti-emetics

Investigations

- LFTs, FBC, U&Es, (K<3.5mmol/L), MSU, Mg
- Ultrasound to exclude hydatidiform mole or multiple pregnancy

Assess for other factors

- Thyroid, gastro-intestinal complaint/pathology, central nervous system
- Social issues

Information and documentation

- Orientate to environment
- Provide written information on nutrition and hyperemesis including 'Nausea and Vomiting of Pregnancy (Hyperemesis)' (see associated ADHB documents section)
- Document the woman's clinical management plan in the clinical record

Nutrition

- Encourage oral intake – eat and drink as tolerated
- Notify the dietitian within 24 hours – for assessment of the woman's nutritional status and documentation of a nutrition plan/nutrition education
- If overnight admission – add to diet list and notify the ward dietitian next morning
- Aim to meet nutritional requirements

Consider support services

- Interpreter
- Physiotherapy – relaxation/stress management
- Social worker – other factors contributing to ongoing illness
- Consider complementary therapies (see planning for discharge)
- Involving physician – if concerned about management issues or potential underlying pathology

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5. Intravenous fluids

Daily assessment and a management plan are required.

Aims of fluid therapy:

- Rehydrate and replace electrolyte losses
- Keep the woman well-hydrated, and maintain electrolyte balance and acid base balance

Rehydration

Mild dehydration:

- Women who are mildly dehydrated, i.e. may show decreased skin turgor, JVP=0 →2, urine = trace → 1+, ketones, normal urea and creatinine, may not need IV fluids
- They can start on oral intake/balanced nutrition ± anti-emetics and vitamins
- If vomiting/ptyalism is not settled later that day, IV fluids should be considered

Moderate:

- Severe dehydration: most women requiring hospital admission are at least moderately dehydrated, and require at least 2 - 3 litres of IV fluids before maintenance fluid is initiated

Initial replacement:

- Vomitus losses contain 100 - 150mmol of sodium/litre
- Replacement of losses from vomiting should be with normal saline
- Women should have dehydration corrected by using normal saline with addition of potassium as required with daily monitoring of electrolytes. The following premixed bags are currently available for use
  - 30mmol potassium chloride in 1000 mL sodium chloride 0.9%
- If glucose is used in the presence of thiamine deficiency there is a small risk of precipitating Wernicke's encephalopathy. All women admitted with hyperemesis should be prescribed thiamine initially to minimize the risk of this rare but serious complication
- Refer to the table below for replacement fluids guidelines

Composition of gastrointestinal secretions

Reproduced by kind permission of the author from "Tutorials for Junior Students of Surgery"; Ed. Graham and Andrew Hill, Uniprint 1989.

	Volume (mL)	**Na^+ (mmol/l)**	**K^+ (mmol/l)**	**Cl^- (mmol/l)**	**HCO_3^- (mmol/l)**
Gastric Juice	1000	100-150	15	120	0
Pancreatic Fistula	700	140	5	75	120
Biliary Fistula	500	145	5	90	40
Jejunostomy	2000 – 3000	110	5	90	30
Ileostomy	500	115	8	45	30
Diarrhoeal Stools	500 – 15000	120	10	90	45

Note: The high concentration of chloride and the absence of bicarbonate in gastric juice. All the other secretions are for all practical purposes similar with the exception of pancreatic juice which is high in bicarbonate.

Commonly used IV fluids per litre

	Na^+ (mmol)	**Cl^- (mmol)**	**Gluconate**	**Acetate**	**K^+ (mmol)**	**Mg^+ (mmol)**	**Glucose (g)**
0.9% Sodium chloride (normal saline)	150	150	-	-	-	-	-
Plasmalyte	140	98	23	27	5	1.5	-
5% Glucose	-	-	-	-	-	-	50
0.18% sodium chloride and 4.2% Glucose	30	30	-	-	-	-	40
10% Glucose	-	-	-	-	-	-	100
Gelofusin	154	120	-	-	-	-	-
4% Albumin	140	128	-	-	-	-	-

Maintenance fluids

Maintenance requirements:

- This applies to women with no ongoing losses
- Any ongoing losses should be replaced as per “initial requirements”

The glucose requirements depend on energy expenditure but in “starvation” in a non-pregnant sedentary average-sized person, 100g/day of glucose should usually prevent ketonuria. This is the equivalent of 2 litres of 5% glucose. In pregnancy this may be increased and 150 - 200 gms/day be required.

The use of standard premix bags of 5% glucose with potassium chloride 20mmol in 1000 mL is recommended as maintenance IV fluid if the woman can not maintain her own requirements.

The following pre mixed bags are currently available for use:

- 20mmol potassium chloride in 1000 mL glucose 5%
- 30mmol potassium chloride in 1000 mL sodium chloride 0.9%

General points:

- Assessment of adequate hydration can only be achieved by accurate fluid measurements including urine output/24hours
- Urinary ketones are not an accurate guide to hydration and should not be used in isolation to make clinical decisions about IV fluid or nutrition
- The use of 4% glucose in 0.18% saline is not recommended since it does not provide adequate glucose to meet requirements

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6. Prescribing medication

The national medication chart should be used. It is important to distinguish between regular and as required medication. The hyperemesis prescribing sticker should be placed on the national medication chart on admission (see prescribing sticker for hyperemesis gravidarum section). Please refer to the following for detailed advice on prescribing.

Anti-Emetics

Many pregnant women are anxious about taking medication. Metoclopramide, cyclizine and prochlorperazine are frequently used and are generally considered safe. The use of ondansetron in this population has increased in recent years and recent evidence suggests that this practice is safe (Pasternak B, 2013), (Einarson E, 2004), (Anderka M, 2012), (Asker C, 2005). On admission these medications should be discussed with the woman.

Many women settle without requiring anti-emetics and they may prefer to try this option first.

If their condition is not starting to settle after 24 hours on the ward they should be encouraged to take an anti-emetic regularly.

Consider the mode of administration, e.g. pr. IV or oral:

- If one drug does not help, a different drug may be effective
- Choose a drug from a class with different mechanism/site of action
- Advise the woman of common side effects

First line anti-emetics are:

	Route	Dose and frequency
Metoclopramide	IV, IM, PO	5 - 10 mg q6h*

- Give regularly for 24 hours before adding in second line anti-emetics
- *Changes in pharmacokinetics of metoclopramide in pregnancy mean that it may be cleared faster than in general population and should be prescribed q6h to allow for this variability

Second line anti-emetics are:

	Route(s)	Dose and frequency
Cyclizine	IV**, PO	25 - 50 mg q8h
Prochlorperazine	PR PO	25 mg q12h 5 - 10 mg q6 – 8h
Ondansetron	IV, PO	4 - 8 mg q8 - 12h

**Give as a slow IV push to avoid dizziness. May be diluted with an equal volume of water for injection or Glucose 5%. Dilution with NaCl 0.9% should be avoided due to risk of crystallization.

The use of ondansetron wafers/orodispersible tablets should be considered as an alternative to IV therapy as there is a significant cost advantage to oral therapy.

Vitamins/minerals

All women	**Route(s)**	**Dose and frequency**
Folic acid (first trimester)	PO	5 mg daily
Iodine	PO	150 micrograms daily
Pyridoxine (Vitamin B6)	PO, IV (IV Section 29)	50 mg daily
Thiamine (Vitamin B1)	PO IV, IM (Section 29)	50 - 100 mg daily or 200 mg daily

Thiamine

Women admitted with hyperemesis have all had a period of starvation and are potentially at risk of acute thiamine deficiency (Wernicke's encephalopathy) at time of re-feeding. This is a rare complication, but there have been a number of case reports in the literature. Prophylaxis may be achieved by thiamine supplementation for 2 days.

Rarely, serious hypersensitivity/anaphylactic reactions can occur, especially after repeated administration of parenteral thiamine. There is a greater risk of this occurring with IV bolus administration than with IV infusion, or IM administration.

- Thiamine may be given as below (see associated ADHB documents section)
- Intermittent intravenous infusion, add to 50 - 100 mL of IV fluid (sodium chloride 0.9%) and given over 10 - 30 minutes
- Direct intravenous infusion, undiluted into a vein or the side arm of a running infusion (over at least 10 minutes)
- Intramuscular injection, undiluted into a large muscle mass

Prednisone

To be considered in severe hyperemesis, though evidence is from small trials (see supporting evidence section – (Safari, H.R. 1978), (Nelson-Piercy Cetal, 2001)). Literature is varied as to drugs (methylprednisolone, hydrocortisone and prednisone) and doses. This option may only be taken following physician consultation.

Medication with prolonged hyperemesis

- Further concerns contact the obstetric physicians or clinical pharmacist
- Doctor to prescribe antiemetic as indicated
- Doctor and nurse/midwife to provide woman with verbal and written information on the medications

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7. Ongoing treatment

The following table describes the general plan of management for a woman experiencing hyperemesis following admission:

Stage	Description
Daily assessment	• Weight. • Fluid balance (input and output) • Ketones once daily for morning ward rounds • Urea and electrolytes PRN until IV discontinued • Food chart
Nutrition	Hyperemesis diet ordered. Nutritional supplements should be prescribed by the dietitian if required. Note: Enteral feeding may need to be considered if there is no immediate improvement in nutritional status, i.e. consultant discussion/in consultation with the dietitian. Parenteral nutrition should only be considered after a trial of enteral nutrition, in very rare circumstances as a last resort.
Intravenous management	As prescribed.
Vitamins	Continue as necessary.
Antiemetics	• Continue 1st line antiemetics as prescribed • Consider adding 2nd and 3rd line as necessary (see obstetric inpatient management flowchart)
Consider	According to the woman's status consider: • Thromboprophylaxis • Enteral feeding (see RBP Nursing & Midwifery Practice Manual)
If planned termination of pregnancy ensure	• Social worker/counsellor input early to contact social work team from Epsom Day Unit (EDU) to clarify issues around decision making (i.e. if nausea absent would the woman consider continuing pregnancy or is the decision based on other circumstances) • Discuss options with the woman • Contact EDU for appointment if planned. Ask for urgent EDU appointment (to reduce the woman's length of stay) – if not available – contact certifying consultant to propose GA suction termination of pregnancy

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8. Pre-discharge process

The following steps describe the general plan of management for a woman experiencing hyperemesis as her condition improves and she is discharged:

a) Address other contributing factors:
- Home situation – expectation, food preparation
- The need for extra nutritional advice/dietitian counselling
- The social worker needs to consider safety, financial, psychosocial issues

b) Prescriptions for home:
- Antiemetics
- Women should only be discharged when they are stabilised on a regime which is practical (includes financial issues) for the woman to manage at home

c) Funding issues to be considered:
- Prescribe drugs generically as branded versions may incur additional cost for the woman

d) Offer day/night leave prior to formal discharge so the woman feels supported whilst still an inpatient;

e) Prior to discharge the following criteria should be met:
- Oral fluid intake to ensure adequate hydration
- Food intake at the last 3 meals meeting nutritional requirements
- If on antiemetics, should for the preceding 24 hours be on a totally oral (or rectal) regime which is sustainable at home

f) The doctor in consultation with the dietitian is to assess the woman and her nutritional status;

g) The doctor/nurse/midwife is to provide the woman with verbal and/or written discharge education/ advice/ instructions;

h) The doctor is to write a medical summary of care including follow up arrangements, to the woman's LMC and/or GP. This should be done on HealthWare (antenatal admission screen and risk page) as well as any gynaecological discharge summary. (This medical summary may document the recommendation that the woman be reviewed by the LMC within 7 days of her discharge). Any prescriptions should be done as soon as possible after decision to discharge by medical staff members;

i) If the woman is unbooked but needs a medical follow up in a doctor's clinic, an internal referral should be sent to the clinic by the doctor. If the woman requests midwifery booking with the hospital team please ensure this is made clear on the referral;

j) The midwife/nurse is to:
- If the woman not booked for antenatal care yet, provide advice re booking with an LMC and arrange routine MSS-1 or anatomy scan

k) The midwife/nurse is to
   - Check correct address & phone number and LMC
   - Ensure all documentation in the clinical record is complete and/or computer entries are correct and updated to time of discharge, and direct any queries to medical staff members

l) As indicated, the midwife/nurse is to reinforce the doctor's discharge advice by providing the woman with additional verbal and/or written discharge education/advice instructions.

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9. Post discharge documentation procedure

Follow the steps below to complete the documentation:

a) Verify the report to ensure it is sent to the LMC and GP;

b) Ask the ward clerk to arrange clinic follow up as advised by the medical team;

c) Phone the LMC if follow up is required by the LMC within 7 days.

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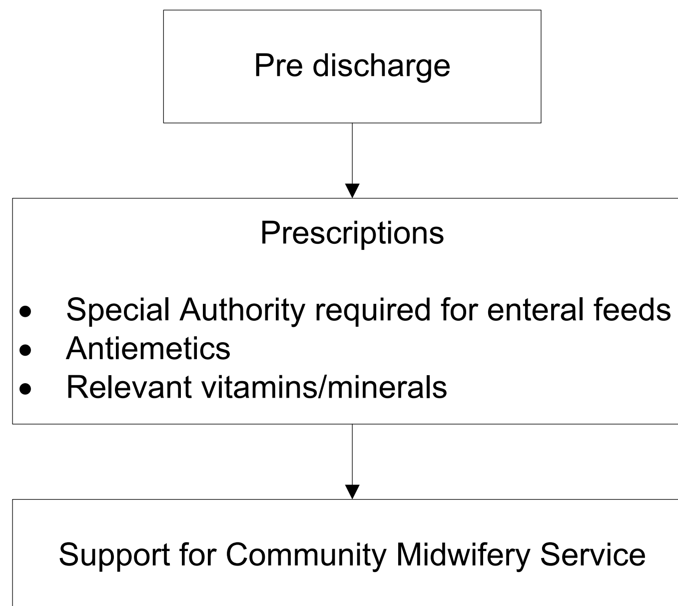
10. Flowchart: Discharge process

A [ ] Hypermesis continuing pregnancy + B [ ] Hyperemesis for termination of pregnancy



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11. Clinical pathway for hyperemesis gravidarum

The following pathway is a guideline and does not replace clinical judgement:

Admission Plan - Day of Admission

Goals	Completed	
	Date	Signature
1. Achieves and maintains Negative ketonuria following rehydration		
2. Meeting nutritional and fluid requirements on discharge either per oral or via NGT.		
3. Patients shows understanding of how to manage HE, (evidence of strategies / management plan for future).		
4. Tolerating oral anti–emetic therapy for 24 hours prior to discharge		
5. Social concerns addressed		
6. Booked in with LMC. If LMC is NWH then community midwife contacted for booking		

LMP	EDD	Gravida/ Parity
Pre-pregnancy weight	Admission weight	Height

History

Continue over→

Nutrition/ elimination	• Notify dietitian of admission • Notify kitchen of need for low risk hyperemesis diet • Record and quantify food and fluid intake on "Food and Fluid Diary". • Assess need for laxative • Ensure accurate fluid balance chart recordings - include input, urine output and vomiting. (total over 24hour time period).		
Psycho-social	• If repeat admission refer to Social Worker. • Ask relevant questions to assess living conditions and support at home. Refer to Social Workers as appropriate.		
Interpreter	• Provide correct information using interpreter if necessary		

Continuation – Day ___________ Date ___________

Name	Signature	Date	Time

Midwifery staff		**Signature when completed**			
Consults	Dietitian Doctor Physiotherapist Social Worker				
Tests	Blood, USS, weight, ketones				
Treatment	Fluids: continue/discontinue medications				
Observations	T P on hyperemesis chart Record oral intake				
Nutrition/elimination	Food and fluid diary continued Quantify oral fluids tolerated Quantify food tolerated. Need for extra snacks? Need for laxative?				
Psycho-social	Continue to assess social needs / support				
Education	General advice Anti nausea advice Coping mechanisms Stress reduction				

Nutrition/ elimination	• Notify dietitian of admission • Notify kitchen of need for low risk hyperemesis diet • Record and quantify food and fluid intake on "Food and Fluid Diary". • Assess need for laxative • Ensure accurate fluid balance chart recordings - include input, urine output and vomiting. (total over 24hour time period).		
Psycho-social	• If repeat admission refer to Social Worker. • Ask relevant questions to assess living conditions and support at home. Refer to Social Workers as appropriate.		
Interpreter	• Provide correct information using interpreter if necessary		

Continuation – Day ___________ Date ___________

Name	Signature	Date	Time

Midwifery staff		**Signature when completed**			
Consults	Dietitian Doctor Physiotherapist Social Worker				
Tests	Blood, USS, weight, ketones				
Treatment	Fluids: continue/discontinue medications				
Observations	T P on hyperemesis chart Record oral intake				
Nutrition/elimination	Food and fluid diary continued Quantify oral fluids tolerated Quantify food tolerated. Need for extra snacks? Need for laxative?				
Psycho-social	Continue to assess social needs / support				
Education	General advice Anti nausea advice Coping mechanisms Stress reduction				

Discharge planning	Review progress towards goals • Maintaining hydration and fluid requirements. • Eaten and kept down 3 consecutive meals > ½ meals and snacks. • Managing on oral anti-emetic regime Social supports in place Ensure booked with LMC				
Discharge procedure	Script written Discharge follow up in place Discharge summary completed				

	Signature when completed			
Medical Staff				
IV Fluids Charted for 24 hours				
Bloods ordered and reviewed				
Medications reviewed				
Assess need for NG feed. Discuss with dietitian				
Ultrasound reviewed				
Nucal scan offered for 12/40				
Assess for thromboembolic risk				

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12. Prescribing stickers for hyperemesis gravidarum

National Women's Health PRN Medications for Hyperemesis
Refer to National Women's Hyperemesis Guidelines for further details

Date	Medicine	Dose	Units	Route	Frequency	Max dose/24hrs	Indication	Pharmacy & special instructions	Prescriber's signature	Pharm	Sign, date and time to cancel
	CYCLIZINE	25-50	mg	po/slow IV	q8h	150mg	nausea/ vomiting	for slow IV administration, mix with 5mL water for injection			
	PROCHLORPERAZINE SUPPOSITORY	25	mg	PR	q12h	50mg	nausea/ vomiting				
	ONDANSETRON	4	mg	po/IV	q8h	12mg	nausea/ vomiting	consider using wafers for po administration			

(PROCHLORPERAZINE and ONDANSETRON stickers also include: Dose range; Dose calculation (eg mg/kg per unit).)

National Women's Health Regular Medications For Hyperemesis - Refer to National Women's Hyperemesis Guidelines for details

Section	Date	Medicine	Dose	Units	Route	Frequency	Pharmacy & special instructions	Prescriber's Signature	Pharm	Sign, date and time to cancel	Times
Antiemetic		METOCLOPRAMIDE	10	mg	po/IV	q6h					0600, 0800, 1400, 1800, 2200
Vitamins and Minerals		PYRIDOXINE (VITAMIN B6)	50	mg	po	daily					0600, 0800, 1400, 1800, 2200
		THIAMINE (VITAMIN B1)	50	mg	po	daily					0600, 0800, 1400, 1800, 2200
		FOLIC ACID (in the first trimester)	5	mg	po	daily					0600, 0800, 1400, 1800, 2200
		IODINE	150	micrograms	po	daily					0600, 0800, 1400, 1800, 2200

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13. Supporting evidence

- Anderka M et al Medications used to treat nausea and vomiting of pregnancy and the risk of selected birth defects. Birth Defects Research (Part A) Clinical and Molecular Teratology 2012: 94;22-30
- Asker C Use of antiemetic drugs during pregnancy in Sweden. Eur J Clin Pharm 2005:61;899-906
- Einarson E et al The safety of ondansetron for nausea and vomiting of pregnancy: a prospective comparative study. RCOG 2004:111;940-943
- Jewell D, Young. Interventions for nausea and vomiting in early pregnancy. *Cochrane Database of Systematic Reviews 2003*. Issue 4. (2007 revision)
- Nelson-Piercy Cetal br JDG 2001; 108: 9-15
- Pasternak B et al Ondansetron in Pregnancy and risk of adverse fetal outcomes. NEJM 2013:368(9);814-23
- Safari, H.R. et al AM S&G 1998, 1978: 921-924

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14. Associated ADHB documents

- Code of Rights
- Informed Consent
- Intravenous Fluid Prescription - Adult
- Medications - Administration
- Medications - Prescribing
- Post Operative Nausea & Vomiting (PONV) in Adults in PACU
- Thiamine Hydrochloride Medication Administration Guideline

Other

- Nutrition Services Ward Reference Manual - particularly the 'Standard of Care - Nutrition Management of Hyperemesis' and 'Protocol for Enteral Feeding'

Patient information

- Nausea and Vomiting of Pregnancy (Hyperemesis) (April 2011)

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15. Disclaimer

No guideline can cover all variations required for specific circumstances. It is the responsibility of the health care practitioners using this ADHB guideline to adapt it for safe use within their own institution, recognise the need for specialist help, and call for it without delay, when an individual patient falls outside of the boundaries of this guideline.

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16. Corrections and amendments

The next scheduled review of this document is as per the document classification table (page 1). However, if the reader notices any errors or believes that the document should be reviewed ***before*** the scheduled date, they should contact the owner or the Clinical Policy Advisor without delay.

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