Oral Intake and Gastric Acid Reduction Prophylaxis in Labour

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• Excluded	
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1. Purpose of guideline

Obstetric patients are considered at increased risk of aspiration of gastric contents during general anaesthesia when laryngeal reflexes are reduced. This is associated with significant morbidity and mortality. Obstetric patients are at a higher risk compared to the non-pregnant population because high levels of progesterone cause relaxation of the musculature at the gastro-oesophageal junction and increased gastric residual volume. In addition, there is higher intra-gastric pressure due to the gravid uterus, which causes gastric contents to be forced upwards. Studies have shown that the administration of parenteral opioids such as morphine in labour is associated with delayed gastric emptying.

The risk may be minimised by appropriate acid reduction prophylaxis and restriction of oral intake around the time of delivery for those women who are at a higher risk of operative intervention in the peri-partum period, or those who are undergoing elective Caesarean section.

Acid reduction prophylaxis decreases gastric acid secretion and may decrease gastric volume. It does not affect the pH of the gastric contents that may already be present in the stomach, and therefore must be given some time in advance of general anaesthesia in order to be fully effective. Sodium citrate is a solution that is given orally to neutralise stomach acid just prior to induction of general anaesthesia.

Timely administration of acid reduction prophylaxis and sodium citrate reduces the degree of pulmonary damage should aspiration occur; however, neither will reduce the risk of aspiration or pulmonary damage associated with aspiration of solid food.

2. Guideline management principles

Gastric acid reduction prophylaxis and dietary restriction should be given to those women who are considered higher risk for operative intervention. These women should be identified in labour and offered acid reduction prophylaxis, which should be administered regularly until delivery of the placenta, **after which it should discontinued.**

These women should only be permitted clear fluids or isotonic sports drinks (e.g. Gatorade or Powerade) and should be discouraged from eating. This is to reduce the risk of aspiration of solid gastric contents if they require operative intervention under general anaesthesia.

3. Speed of onset of drugs used to reduce gastric acidity

Effectiveness of drugs to reduce gastric acidity is dependent on administration timing. Both oral omeprazole and oral ranitidine need up to three hours for their maximum effect. Intravenous ranitidine and omeprazole can become effective from 45 to 60 minutes after administration. Sodium citrate is effective immediately, but its duration of action is limited by rate of new gastric acid secretion and speed of gastric emptying.

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4. Indication for acid reduction prophylaxis

Omeprazole or ranitidine should be given to those women who are considered higher risk of operative intervention in the peri-partum period. In addition, on making a decision for surgical intervention in labour an appropriate dose and route of administration of intravenous acid reduction therapy should be prescribed by the surgeon if none has been administered during labour (or within the last 6 hours in the case of ranitidine).

If a general anaesthetic is considered, sodium citrate should be given orally following discussion with the duty anaesthetist.

Low-risk labouring women do not require acid reduction prophylaxis. However, it should be noted that as labour progresses, and circumstances change, the course of labour may change to a labour with a higher risk of operative intervention.

5. Defining high-risk groups for operative intervention in labour

There is no national or international method for defining women at higher risk of operative intervention in the peri-partum period; however, the following groups of women may be considered at higher risk of operative intervention or general anaesthesia. Use clinical experience and knowledge in identifying women who may require acid reduction prophylaxis as the following list is not exhaustive.

Women with higher risk of operative intervention or general anaesthesia in the peri-partum period:

5.1 Maternal risk factors

- Contra-indication to regional anaesthesia (e.g. coagulation problems, maternal sepsis)
- Previous Caesarean section/vaginal birth after caesarean (VBAC)
- BMI >40 at booking
- Diabetes
- Medical condition of mother, e.g. cardiac disease, respiratory disease
- Previous post-partum haemorrhage >1 L
- Parity ≥5
- Polyhydramnios
- Pre-eclampsia/eclampsia/gestational hypertension
- Slow progress in labour
- Age > 40 years

5.2 Fetal risk factors

- Multiple pregnancy
- Large for gestational age baby (EFW >4.5 kg)
- IUGR
- Pre-term labour
- Signs of fetal distress or meconium

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6. Treatment for women in labour or for operative intervention

6.1 Elective Caesarean sections

- Nil by mouth: six hours for food and two hours for clear fluids, including the pre-operative Nutricia carbohydrate drink prior to their surgery
- EITHER:
  - Ranitidine 150 mg orally on the night before surgery and 150 mg orally in the morning of surgery, two hours prior to induction of anaesthesia
    OR:
  - Omeprazole 20 mg tablet on arrival in ORDA
- Those women who are having their surgery under general anaesthetic should also receive oral sodium citrate (30 mL of 300 mmol/L). This should be given within 15 minutes of induction of general anaesthesia

6.2 Lower risk labour

- No gastric acid reduction prophylaxis required

6.3 Higher risk labour

At start of labour, or if a previously lower risk labour develops risk factors for operative intervention:

- Woman should be advised to have clear fluids orally only (no food)
- Gastric acid reduction prophylaxis should be prescribed on the ONCE ONLY section of the National Medical Chart and given as EITHER:
  - Omeprazole 20 mg orally (one dose lasts up to 24 hours)
    OR:
  - Ranitidine 150 mg orally (one dose immediately and one dose 6 hours later, unless placenta already delivered)

6.4 Decision for operative delivery/trial of forceps/ERPOC/perineal tear repairs/EUA

- A single dose of intravenous omeprazole (40 mg) OR intravenous ranitidine (50 mg should be given once the decision has been made for surgical intervention if neither of these drugs has already been given (or if ranitidine was given more than 6 hours previously). Prescribe this on the ONCE ONLY section of the National Medical Chart.
- Oral ranitidine and omeprazole take at least two hours to be effective, and the intravenous preparations take around 60 minutes to have clinical effect. Therefore, these should be administered as soon as possible after decision for theatre has been made, unless clinical urgency dictates otherwise.
- If a general anaesthetic is considered, then sodium citrate (30 mL of 300 mmol/L) should be given orally. This is normally administered by the duty anaesthetist in the hand-over or operating room.

The administration of omeprazole/ranitidine or sodium citrate **SHOULD NOT** delay transfer to theatre.

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6.5 Preparation and administration of intravenous ranitidine

	Follow these steps
Preparation	• Dilute the intravenous solution immediately before use • Dilute a 50 mg (2mL) ranitidine ampoule with 20 mL sodium chloride 0.9%
Administration	• Administer as a slow intravenous bolus over three to five minutes • Rapid administration may cause bradycardia, therefore extend the administration time for at-risk women

6.6 Preparation and administration of intravenous omeprazole

Follow these steps.

Step	Action
1.	Use omeprazole injection with diluent provided. DO NOT use sodium chloride 0.9%
2.	Reconstitute 40 mg vial with the 10 mL diluent provided (final concentration 4 mg/mL)
3.	Draw up 10 mL of diluent provided, no other solution must be added or used
4.	Slowly add approximately 5 mL of the diluent to the vial of powder
5.	Withdraw as much air as possible from the vial to reduce the positive pressure
6.	Transfer the remaining diluent into the vial
7.	Rotate and shake the vial to dissolve the powder
8.	Prepare immediately before use (or discard)
9.	Discolouration may occur if incorrect reconstitution technique is used – do not use if solution is discoloured or if any precipitate is present
10.	**Administration:** • Flush with sodium chloride 0.9% before and after administration • Inject slowly over at least 2.5 to 5 minutes, at a rate not exceeding 4 mL/minute

7. Monitoring and audit

Clinical audit should be undertaken to review guideline compliance; 100% compliance (excluding exempted women) is expected for both dietary restriction and antacid prophylaxis in all women presenting with a higher risk of operative delivery or anaesthetic intervention in the peri-partum period. Gastric acid reduction prophylaxis should be prescribed according to women's individual needs. Exceptions to this include women who decline pharmacological gastric acid reduction prophylaxis, allergy to the drugs or other contraindication.

8. Supporting evidence

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9. Associated documents

- Caesarean Section (CS) - Pre, Peri & Post-Op Care
- Caesarean Section (CS) - Acute - Level 8 OR
- Caesarean Section (CS) - Post Anaesthesia Care Unit (PACU)
- Perineal Tears – Third and Fourth Degree
- Intrapartum Care – Physiological Labour and Birth

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- Surgical Safety Checklist
- Medications - Prescribing

Clinical forms

- Obstetric Anaesthesia Assessment CR4114
- Pre-operative Checklist CR4048

10. Disclaimer

No guideline can cover all variations required for specific circumstances. It is the responsibility of the health care practitioners using this Auckland DHB 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.

11. 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 Document Control without delay.