1. Purpose
This guideline or procedure outlines the diagnosis and management for Low milk supply management including medications for low milk supply at the Women's. 
This guideline/procedure is related to the Breastfeeding Policy.

2. Definitions
Milk supply is considered low when there is not enough breast milk being produced to meet the baby's growth needs. 
Low milk supply is the one of the most common reasons given for early weaning, therefore it is imperative the condition is diagnosed accurately and if confirmed, managed appropriately. Undersupply may be real, or perceived. Mothers may perceive their infant’s need for frequent feeding and comfort as a problem with milk supply. Awareness of normal feeding patterns and growth and the developmental stages of infants can help mothers to be more reassured about their own infant’s feeding behaviour [1, 2].

Causes [3, 4, 6]
- Insufficient removal of milk from the breasts leading to a reduction in milk production is the most likely cause of low supply. This is associated with:
  - Poor attachment
  - Insufficient breastfeeding and restricting breastfeeds
  - Sleepy infant
  - Mother-infant separation
  - Unresolved engorgement
  - Use of infant formula, teats and dummies/pacifiers
  - Ankyloglossia (tongue-tie) and other infant oral cavity abnormalities
- Other reported causes of low milk supply may include:
- Insufficient glandular tissue- either primary – e.g. hypoplastic breasts or secondary – e.g. surgery such as reduction mammoplasty.
  - Maternal medical problems e.g. retained products, severe postpartum haemorrhage, serious maternal illness, severe anaemia, maternal diabetes, obesity, maternal medications, hypothyroidism, polycystic ovary syndrome, Sheehan’s syndrome, hormonal imbalance, inverted nipples [9]
  - Maternal smoking
  - Maternal alcohol consumption may slow the milk ejection reflex thus reducing breast drainage and milk production
  - Use of combined oral contraceptive medications
  - Excessive exercise [6]
  - Infant medical problems interfering with breastfeeding, e.g. congenital abnormalities, cardiac problems, prematurity, illness, oromotor dysfunction
  - Menstruation and/or subsequent pregnancy – some women perceive a reduction in milk supply during menstruation or early pregnancy
  - Early introduction of solids

Signs and symptoms [3, 6]
Low supply may be indicated by the following clinical signs. However, a careful history and examination is necessary, as the presence of some of these may not necessarily indicate low supply.
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- Fewer than 3 wet nappies/24 hours by day 3
- Fewer than 5-6 heavy wet nappies/24 hours after day 5
- Concentrated urine
- No change to normal breastmilk stools by day 3-4 and scant stools thereafter
- Dry mucous membranes
- Weight loss greater than 10% birth weight
- Further weight loss after day 3-4
- Less than 20 gm weight gain/day after day 3-4
- Failure to regain birth weight by 2 weeks of age
- Limited evidence of milk transfer during feeds
- Prolonged or continuous feeding with little evidence of satiety
- Persistent jaundice
- Persistently sleepy or lethargic infant
- Excessive crying, weak cry
- Infant appears unwell
- No signs of lactogenesis II on day 3-4 (breast fullness and heaviness)
- Breasts remain soft in between feeds (normal after around 3 weeks).

3. Responsibilities

Nurses, doctors and midwives caring for women with a low milk supply should follow this guideline.

4. Guideline

4.1 General management

- Once the cause has been identified, a plan of management should be prepared to ensure the infant remains hydrated and nourished whilst implementing strategies to increase mother’s milk supply [1, 3, 5, 7].
  - Correct positioning and attachment, and management of any nipple trauma
  - Increase the number of breastfeeds: wake the infant more often and/or offer the breast for comfort instead of using a dummy/pacifier
  - Educate the mother regarding infant hunger and satiety cues and the signs of effective milk transfer
  - Decrease non-medically prescribed or unnecessary use of artificial infant formula
  - Implement 'switch feeding' if infant is sleepy: change the infant from one breast to the other several times during a feed to keep the infant alert during the feed while milk supply is low
  - Increase skin-to-skin contact
  - Breast compression during feeds may increase milk transfer
  - Additional breast stimulation and drainage through regular expressing after or between breastfeeds
  - Good maternal nutrition, rest, relaxation and domestic support and reduce smoking, caffeine and use of alcohol

4.2 Specific management

- Consider referral to a lactation consultant for specialised lactation management, particularly if there are associated maternal or infant medical conditions
• Treat any underlying maternal or infant medical conditions identified
• Medications that increase milk supply, i.e. galactogogues may also be considered.

4.3 Medicines

• Medicines that may increase milk supply should only be recommended following a thorough assessment of breastfeeding and where appropriate management has been implemented. Galactagogues alone will not increase breastmilk supply. Appropriate lactation management during treatment should be maintained even if medicines are commenced.

Commonly available galactagogues:
• Domperidone (Motilium®)
• Metoclopramide (Maxolon®, Pramin®) now not commonly prescribed
• Herbal preparations

Domperidone (Motilium®) is a peripheral dopamine antagonist. It blocks dopamine receptors in the gastrointestinal tract and the brainstem. It does not enter the brain compartment as it does not cross the blood brain barrier. It is generally used for the treatment of nausea, vomiting or reflux. As it increases prolactin levels, it is accepted for use as a galactagogue to increase breast milk supply.

Royal Women’s Hospital galactagogue recommendation

Dose:
The current regime is 10 mg (one tablet) three times a day for 2 to 4 weeks [10],[14] Once an adequate breastmilk supply is achieved, the dose can be reduced slowly, for example, one tablet twice a day for a week then cease tablets.

It is not necessary to take the medication prior to meals (as it is not being taken for its anti-nausea effect). Domperidone is available as 10 mg oral tablets.

Prescribing:
On the PBS, only 25 tablets are available. Usually, it is preferable to write a private prescription for 100 tablets.

Duration of treatment:
Women may require treatment for a number of weeks (or months), especially if they are expressing milk for a preterm baby or inducing lactation.

Side-effects:
• Common – dry mouth, headache [11]
• Uncommon –, urticarial rash, insomnia[11]
• Rare – loss of balance, palpitations, swelling of feet, restlessness [11]

Interactions:
Is contraindicated with ketoconazole, erythromycin or other CYP3A4 inhibitors which prolong the QTc interval such as fluconazole, voriconazole, clarithromycin and amiodarone. [15]

Domperidone should be used with caution as may interact with other medicines. Contact The Women’s Medicine information line for further advice.

Medicines Information Line Phone: 8345 3190.

Safety in lactation:
Clinical trials of domperidone have been conducted on breastfeeding women to establish its role as a galactagogue. The amount of domperidone ingested by the infant through the breastmilk would be extremely low (less than 0.2 mcg/kg/day) [13] as compared to doses used to treat infants and children (600-1600 mcg/kg/day) [12]. Side-effects in infants of breastfeeding mothers have not been reported.
Domperidone in high doses is known to prolong the QT interval of the heart in some patients, including babies. Doses should be kept to less than 10-20 mg three to four times a day and not to use in patients with pre-existing prolonged QT interval [8]. In clinical practice, domperidone side-effects in breastfeeding women have occurred rarely when compared with metoclopramide (Maxolon®, another galactagogue. For this reason, domperidone is the appropriate first-line galactagogue.

Low milk supply and Domperidone for increasing low milk supply patient information leaflets (link).

Metoclopramide (Maxolon®, Pramin®) is a central dopamine antagonist. It has an effect in the gastrointestinal tract and in the brain. It is generally used for the treatment of nausea, vomiting or reflux but may also be used as a galactagogue to increase breast milk supply, as it increases prolactin levels like domperidone. Breastfeeding women taking metoclopramide may experience symptoms such as depression or drowsiness.

Metoclopramide can be used as an alternative to domperidone in women who are unable to have domperidone. This may be due to allergic reaction or prolonged QT interval. For further information on the use of metoclopramide, please contact the RWH Medicine Information Line on (03) 8345 3190.

Herbal preparations

Many herbal preparations such as hops, fenugreek, fennel seed, blessed thistle and alfalfa have traditionally been used to increase breastmilk production. However; there is little published research to support their effectiveness in increasing milk supply or their safety to mother and infant. For this reason, herbal preparations are not recommended by the RWH.

Breastfeeding women who are concerned about their breastmilk supply should consult with a lactation consultant or other health care provider. If women plan to take herbal medicines they should do this under the guidance of an herbalist.

5. Evaluation, monitoring and reporting of compliance to this guideline

Compliance to this guideline or procedure will be monitored, evaluated and reported through the following:

- Breastfeeding Services Lactation Consultants when called to provide consultations for women and their babies within the scope of this guideline will review the documented treatment plan to determine consistency with this guideline.
- Where a treatment plan does not comply with this guideline the LC will complete a VHIMS report.
- Breastfeeding Services will review all reported incidents of non-compliance reported through VHIMS and develop an action plan to address issues as required.

6. References

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14. Donovan TJ, Buchanan, K. *Medications for increasing milk supply in mothers expressing breastmilk for their preterm hospitalised infants*. Cochrane Database Syst Rev. 2012 Mar 14;3:


7. Legislation/Regulations related to this guideline

Not applicable.

8. Appendices

Not applicable.

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