

Mastitis Prevention and Treatment

Document Type	Guideline
Function	Clinical Service Delivery
Directorates	National Women's Health
Department(s) affected	Maternity, surgical wards, AED, APU
Patients affected (if applicable)	Postnatal women
Staff members affected	ADHB staff members caring for postnatal women
Key words (not part of title)	lactation, engorgement, breastfeeding, abscess
Author – role only	Lactation Consultant
Owner (see ownership structure)	Owner: SCD Secondary Maternity Issuer: SCD Secondary Maternity
Edited by	Clinical Policy Advisor
Date first published	February 2011
Date this version published	January 2017 - reviewed
Review frequency	3 yearly
Unique Identifier	NMP200/SSM/082

Contents

1. [Purpose of guideline](#)
2. [Guideline management principles and goals](#)
3. [Definitions](#)
4. [Incidence](#)
5. [Infectious and non-infectious mastitis](#)
6. [Pathology](#)
7. [Microbiology](#)
8. [Predisposing factors](#)
9. [Prevention](#)
10. [Positioning for breastfeeding](#)
11. [Diagnosis](#)
12. [Management - conservative](#)
13. [Management - antibiotic therapy](#)
14. [Follow up and recurrent mastitis](#)
15. Complications
 - a) [Breast engorgement](#)
 - b) [Cracked nipples](#)
 - c) [Candida infection](#)
 - d) [Chronic breast pain](#)
 - e) [Pus in breastmilk](#)
 - f) [Blood in breastmilk](#)
 - g) [Breast abscess](#)
16. Flowchart: [Mastitis care pathway](#)
17. Flowchart: [Referrals to breast care team for postnatal women](#)
18. [Supporting evidence](#)
19. [Associated ADHB documents](#)
20. [Disclaimer](#)
21. [Corrections and amendments](#)

1. Purpose of guideline

The purpose of this guideline is to assist clinicians with the prevention and management of mastitis within Auckland District Health Board (ADHB).

[Back to Contents](#)

2. Guideline management principles and goals

The Guidelines and Audit Implementation Network (GAIN) in Northern Ireland identified the need for regional guidelines on the prevention, management and treatment of mastitis. Subsequently they convened a regional multi-disciplinary group and these new guidelines have been developed, from which are intended to aid appropriate mastitis diagnosis, treatment and care. The guidelines have been developed using the most up-to-date evidence at time of publication.

[Back to Contents](#)

3. Definitions

Mastitis is an inflammatory condition of the breast that may or may not be accompanied by infection. Lactational mastitis occurs when pressure builds within the milk cells (alveoli) from stagnant or excess milk, leading to cellulitis of the interlobular connective tissue within the mammary gland.

Mastitis is a common preventable complication during breastfeeding. It can often be self managed; however many breastfeeding women do not get the information or support they need to avoid mastitis or manage it if it does occur.

[Back to Contents](#)

4. Incidence

Estimates of the global incidence of lactational mastitis vary considerably, with some studies suggesting a figure as low as 2% and others reporting incidences up to 50%. A recent study from Glasgow suggests an incidence of 18%. The results from this study are similar to studies from Australia, and it is therefore feasible that around one in five breastfeeding women may experience mastitis.

Recent studies have shown that approximately half of all cases occur in the first four weeks of starting breastfeeding. However mastitis can also occur at any stage during lactation and particularly when the number of breastfeeds or milk expressions is suddenly reduced.

In approximately 3% of those with mastitis a breast abscess may result as a complication. Prompt effective management and treatment of the mastitis helps reduce the risk of a breast abscess developing.

[Back to Contents](#)

5. Infectious and non-infectious mastitis

Both infectious and non infectious mastitis present with symptoms suggestive of an infection. In both types the symptoms may be severe enough to indicate treatment with antibiotics. In cases of infectious mastitis, pyrexia (flu-like) symptoms are more likely to persist for longer than 24 hours and produce significant breast discomfort.

[Back to Contents](#)

6. Pathology

Lactational mastitis happens when pressure from stagnant or excess milk builds within the alveoli. Over-distension of the alveolar cells can cause milk to leak into the surrounding connective tissues. The presence of milk outside the ductal system of the breast can cause a localised immune reaction with subsequent inflammation and swelling. If milk escapes from the alveolar cells and enters the blood stream via the mammary capillary system, the patient will experience an immune response with a pyrexia and malaise even in the absence of infection.

During mastitis there are various changes to the biochemical and cellular composition of breastmilk. These changes result in increased breast permeability, reduced milk synthesis and raised concentrations of immune components. Despite these changes it is safe to continue breastfeeding during an episode of mastitis.

[Back to Contents](#)

7. Microbiology

The organism found in almost all cases of lactational mastitis and breast abscess (a complication of mastitis) is *Staphylococcus aureus*. *Escherichia coli* (or other Gram-negative bacteria), *Bacteroides* species and *Streptococcus* species (alpha, beta and non-haemolytic) are sometimes found, and these latter have, in a few cases, been linked to neonatal streptococcal infection (see evidence table). However, there is no significant correlation between bacterial counts and severity of symptoms. Infants are often colonised with *S.aureus* and an Australian case control study found 82% nasal carriage rate in infants of mothers with mastitis versus 56% in controls (see Amir et al 2006). The direction of transmission is not clear since there was no difference in nasal carriage rates of the mothers. Pathogens such as *S. aureus* may be found in breastmilk where there is no clinical manifestation of mastitis, as evidenced by a study from Finland which took samples of breastmilk from healthy women and found 5 out of 40 samples with *S.aureus* (see Heikkila et al 2003).

Transmission of these organisms between mother and baby has been reported in healthy lactating mothers (see Kawada) and is a potential source of infection for sick preterm infants (see Gastelum et al 2005 and Behari et al 2004).

[Back to Contents](#)

8. Predisposing factors

Milk stasis

- Lack of skin to skin contact at birth
- Ineffective breast drainage caused by poor positioning and attachment
- Scheduled or restricted feeds, long gaps without feeding, missed or short feeds
- Sudden cessation of breastfeeding
- Over abundant milk supply
- Breast engorgement
- Blocked milk duct
- Pressure on a particular area of the breast caused by tight bra or holding the breast firmly during feeding
- Stress and fatigue which leads to less time for breastfeeding
- Separation from baby

Nipple trauma

- Nipple trauma due to ineffective feeding which allows entry of bacteria
- Baby with a tongue tie (or other oral anomaly): this may cause ineffective feeding
- In rare cases, untreated dermatitis of the areola and nipple

Other factors

- Past history of mastitis/abscess
- Local trauma to breast
- Previous breast surgery

The main underlying features of mastitis are milk stasis and nipple trauma.

[Back to Contents](#)

9. Prevention

- Ensure skin to skin contact at birth and unrestricted during hospital stay
- Ensure effective positioning and attachment
- Encourage frequent, baby led feeding
- Prevent nipple trauma through good position and attachment
- Keep the mother and the baby together 24/7 so the mother is able to respond to feeding cues – rooming in
- Avoid missing feeds and leaving long gaps between feeds
- Avoid unnecessary breast milk supplements (BMS)
- Avoid the use of teats and dummies
- Avoid and treat breast engorgement
- Teach gentle massage and hand expression of breastmilk as a self help measure
- Avoid pressure on the breast (tight bra or holding the breast firmly during feeding)

[Back to Contents](#)

10. Positioning for breastfeeding

Some basic principles that should help facilitate good attachment can be applied to how the baby is held. These include:

- The baby's head and body should be in alignment and the neck not twisted
- Baby's tummy turned towards mummy's tummy
- The baby's head should not be held; rather, the baby's neck and shoulders should be supported so that the baby's head is free to tilt backwards
- The woman shapes her breast to maximise a deeper latch
- The baby starts a breastfeed with the nose opposite the nipple
- When the mouth is wide open the baby should be brought swiftly to the breast with the chin leading
- The nipple should be pointing towards the roof of the baby's mouth
- The baby's body should be held close to the mothers' body
- The mother's position should be made sustainable after the baby is attached

To attach well, the baby is held, nose to nipple to be able to tilt the head back and reach for the breast with the chin leading. The baby's lower lip touches the breast first and a wide open mouth forms a teat from both breast tissue and nipple. Then negative pressure within the mouth, produces a seal which prevents the nipple and breast from moving in and out during suckling.

The nipple is situated far back in the mouth at the junction of the hard and soft palate where it will not be damaged. If the baby has not attached well, feeding will be painful and prolonged, and the nipple will be rubbed against the hard palate during feeding, resulting in trauma. If a blister has formed at the tip of the nipple or the nipple is flattened, or has a white line on the tip, this is an indicator that the attachment technique requires improvement.

Signs of good attachment for breastfeeding include:

- The baby's mouth is wide open
- The baby's tongue is forward over the bottom lip
- The baby's chin is touching the breast
- The baby's cheeks are full and rounded
- If visible, more areola is seen at the baby's nose and top lip
- The baby's lower lip is curled back
- Rhythmic sucks and swallows are evident throughout the feed
- The feeding is comfortable for the mother
- The baby is relaxed

[Back to Contents](#)

11. Diagnosis

Women who suspect they have mastitis will usually refer to their GP, midwife, child health nurse or LMC for diagnosis and treatment. Voluntary breastfeeding counsellors, breastfeeding support groups and peer support programmes are an additional point of contact for women seeking guidance on managing mastitis.

The diagnosis of mastitis should be made by examining the patient's breast, observing a breastfeed and carrying out observations of temperature, pulse and respirations to confirm if two or more of the following clinical features are present:

- Painful red, swollen, inflamed area of the breast
- Breast is hot to touch
- Pyrexia of $< 38.4^{\circ}\text{C}$
- Flu-like symptoms (chills, headache, muscle aches)
- Painful lump (blocked duct)

Identifying the cause of mastitis

Useful questions to ask include the following:

- How old is your baby?
- How often does your baby feed in 24 hours? (8-12 times is the average number of feeds in a day.)
- Have you decided to stop breastfeeding suddenly?
- Have you any particular tender areas or lumps on your breast?
- Has there been a recent marked change in your baby's feeding pattern?
- Do you feed your baby on demand, e.g. does your baby decide when he is finished a feed or do you?
- Do you space feeds by offering a dummy or other method of soothing when baby would like to feed?
- Are you a lot busier or stressed than usual?
- What is the longest time your baby has gone without a breastfeed in the last few days?
- Are your nipples sore or cracked?
- Does your bra leave a mark on your breasts or feels too tight?
- Do you feel that you may have more milk than your baby needs?
- Are you using nipple shields or a dummy?
- Have you noticed that your baby is fussier than normal when feeding?
- Is your baby having bottles of infant formula or your own milk?
- Have you recently been on a long journey where the seatbelt restricted breast freedom?
- How long have you had this problem?
- Has your baby's mouth been checked for tongue-tie?
- Have you **ever** had mastitis before?
- Do you ever have any pain whilst breastfeeding?

[Back to Contents](#)

12. Management - conservative

It is important to begin by talking to the patient to elicit information to help establish the underlying cause of her mastitis. This should help her to manage her mastitis and address the cause or causes, and so help to prevent further episodes. Identifying the cause of mastitis in each case should involve taking a comprehensive feeding history and identifying predisposing factors. A full breast feed should be observed and the baby's mouth checked for tongue tie. The breasts should also be examined and observed for tender, sore, lumpy areas, nipple trauma, and oedema and for signs of piercings or previous surgery.

Management: key points

- Routinely examine postnatal patients who complain of nipple/breast pain
- Help maintain adequate and effective breast drainage
- Check breastfeeding technique or refer to appropriate practitioner
- Ensure there are no overlong gaps between feeds
- Examine the infant for signs of candida, tongue tie, poor milk intake
- Identify persistent and severe cases, culture milk as recommended and consider careful prescribing
- Do not advise sudden cessation of breastfeeding during mastitis or breast abscess
- Support the patient to maintain her milk supply should this be necessary
- Teach patients with a large milk supply to manage it and if necessary instruct her how to "block feed"
- Use antibiotics judiciously

Support for prevention and management

Mastitis can be a distressing and debilitating experience and its emotional and physical effects are strongly associated with premature weaning. It is therefore important that patients are provided with information to enable them to find out the cause of their mastitis. Access to skilled, knowledgeable support, while still breastfeeding during mastitis, enables patients to cope with and appropriately manage their symptoms.

Support and encouragement within the home should help enable patients to sustain a decision to breastfeed despite the challenge of mastitis. Families should be encouraged to help patients rest and focus on effective feeding and breast drainage so that they can recover quickly.

All patients with mastitis should be provided with written information and contact details of professional and voluntary breastfeeding support organisations within their community.

Self management

The basic principles underlying the conservative management of mastitis are:

- Empty the breast
- Gentle massage
- Cold compresses after feeds and rest

Frequent effective milk removal is required to treat mastitis and prevent further complications, such as breast abscess or recurrent mastitis. The most reliable method of milk removal is usually effective feeding by the baby. If feeding is not possible, or is not sufficient to ensure good breast emptying, the patient should express milk from the affected breast by hand, by pump* or both. Patients should not routinely be advised to stop breastfeeding or expressing during an episode of mastitis: if they wish to wean this can be supported once they have recovered.

If needed, mothers should be reassured their baby will not be harmed by breastfeeding during mastitis.

Those supporting a patient with mastitis should ensure that she is able to express breastmilk effectively. When expressing breastmilk by hand or by pump* it is important to use an effective technique, one that avoids trauma to the breast. Gentle massage before expressing should encourage the “let down” reflex and aid milk flow. All breastfeeding mothers should be taught how to hand express in the early days after birth so that they can use this technique as needed to manage breast overfullness and early signs of mastitis or during an episode of mastitis.

To remove milk from the inflamed breast as effectively as possible, mothers should be encouraged to offer feeds on the affected side first for the next two or three feeds. To prevent further engorgement, care must be taken to ensure that there is also good milk removal on the unaffected breast while managing mastitis.

*Note: if using a breast pump, it is vital to ensure that the funnel of the pump attachment is large enough. The nipple should not touch the sides or extend the length of the attachment funnel during expression. If a pump attachment larger than the 24 - 25 mm standard is required this can be obtained from ward stock.

It may be helpful to support the mother to change her feeding position for a few feeds so that the area of affected breast is drained as efficiently as possible. The area of the breast corresponding to the baby’s chin will be the area most effectively drained. For example, the underarm position will be helpful if the lower outer quadrant of the breast is affected.

Medication may be started to treat pain, inflammation and pyrexia. If there are no contra-indications, use Paracetamol 500 mg – 1g every 6 hours to treat pain and pyrexia, or Ibuprofen 400mg three to four times a day after food to treat pain, pyrexia and inflammation. .

Codeine phosphate is contraindicated in breastfeeding women.

If the breast is inflamed a cold breast compress (3 -5 minutes maximum - protect skin of breast with a dry wash cloth to prevent thermal shock and ductal damage) can be useful to reduce inflammation and relieve discomfort. This in turn should aid milk flow when used with reverse pressure massage (RPM).

If a breast abscess is suspected do not use RPM until the USS has excluded a collection. Never do RPM for a breast abscess. Warm compresses could be used to assist milk flow before feeding or expressing.

Gentle massage (RPM) of the affected breast and lying flat prior to a feed should help to drain fluid within the tissues aiding milk flow prior to and during feeding or expression of milk. The fingers (not tips) can be used in firm stroking movements towards the sternum and axilla. Care must be taken to avoid massage that is too firm as this can cause trauma and undue pressure and increase inflammation. A soft stretchy support such as tubigrip has been found to be a useful support rather than a bra at this time. Please ensure the correct size is used – not folded over and does not gather or roll at the top as this will cause extra pressure on ductal and breast tissue. In the community the patient can use a stretchy “boob tube” It is important to always obtain consent prior to any massage.

Family support is important to allow the mother time to rest and recover from mastitis and to continue breastfeeding. Extra help will be needed for at least 48 hours. It is important that family members understand that it will not help the mother’s recovery if they formula feed the baby and miss out breastfeeds.

The mother should be supported and encouraged to eat nutritious food to aid recovery and healing. Extra fluids should help alleviate symptoms and reduce any pyrexia.

The patient should be advised to seek urgent LMC or medical advice if after 12 - 24 hours from the onset of symptoms there is no improvement or the symptoms are severe or worsening despite following the recommended self management. For example, if her temperature increases to 38.4oC or above, or the affected breast becomes more painful, swollen or inflamed.

A mastitis care management flowchart has been developed to support these principles. It is recommended that the flowchart is used in conjunction with these guidelines.

If a problem with a breastfeeding technique is suspected then an assessment should be undertaken. This should be by an appropriately trained health professional such as the midwife, lactation consultant or Plunket nurse.

It is necessary to observe a full breastfeed to assess attachment and positioning technique and ascertain if there are any particular concerns about milk supply or trauma to the nipples. See [Positioning for breastfeeding](#) on effective positioning and attachment for breastfeeding.

[Back to Contents](#)

13. Management - antibiotic therapy

Conservative management of mastitis to alleviate symptoms and ensure ongoing breast emptying may be all that is required for treatment.

However, if symptoms are not improving within 12 - 24 hours from onset or the symptoms are severe or worsening despite the patient implementing the recommended self-management practices, the patient should seek urgent LMC or medical advice and antibiotics should be started. An individual judgement on when to start antibiotics should be made on the basis of a full case history and examination of the patient. In severe cases it may not be desirable to wait. It is also important to continue to empty the breast as previously described. A pain score should be obtained. If necessary the patient should be admitted to hospital and commenced on IV antibiotics.

Oral antibiotics for the patient with early infective mastitis (symptomatic)

Condition	Antibiotics	Dose
Mastitis	First-line flucloxacillin	500mg qid po, one hour before meals & last thing at night, for 5-7 days***
Mastitis (penicillin rash *)	cephalexin	500mg tds po for 5-7 *** days
Mastitis (penicillin anaphylaxis or uncertain reaction)	clindamycin	450 mg tds po for 5-7 days *** Swallow whole with a glass of water; cease treatment immediately if diarrhoea develops.

*** NB: Longer treatment duration is seldom warranted. Resolution of all symptoms will not occur until some time after effective antibiotic treatment. According to Therapeutic Guidelines - Antibiotic version 14 2010 page 2 "keep duration of therapy as short as possible. Do not exceed 7 days without a proven indication for longer duration (e.g. endocarditis)".

In hospital for infective mastitis

Please follow the [admission flowchart](#) to follow the admission procedure. Should the patient's condition indicate that IV antibiotics are required see table below:

Antibiotic therapy for infective mastitis

Condition	Antibiotics	Dose
Mastitis	flucloxacillin	1g q6h IV, changing to oral flucloxacillin as above once improved**, for total duration 5-7 days***
Mastitis (penicillin rash*)	cephazolin	1g q8h IV, changing to oral cephalexin as above once improved**, for total duration 5-7 days***
Mastitis (penicillin anaphylaxis or uncertain reaction)	clindamycin (ID pre-approval required)	450 mg po tds 5-7 days*** (excellent bioavailability so IV required if oral intake impossible). Swallow whole with a glass of water; cease treatment immediately if diarrhoea develops.
Mastitis (penicillin anaphylaxis or uncertain reaction) and oral intake not possible	clindamycin (ID pre-approval required)	300 – 600mg q8h IV until oral intake possible then switch to oral as above, total duration 5-7 days***

*For patients with a history of penicillin causing a severe rash, clindamycin may be a more appropriate choice. Please discuss with the ID service for pre-approval..

All patients known to be colonised with MRSA should be discussed with the ID service so the most appropriate antibiotic can be chosen.

** Switch patients to oral antibiotic when the following criteria are met; clinically improving, tolerating oral fluid; temperature $\leq 38^{\circ}\text{C}$ over preceding 24 hours and BP $\geq 90\text{mmHg}$.

*** NB: Longer treatment duration is seldom warranted. Resolution of all symptoms will not occur until some time after effective antibiotic treatment. According to Therapeutic Guidelines - Antibiotic version 14 2010 page 2 “keep duration of therapy as short as possible. Do not exceed 7 days without a proven indication for longer duration (e.g. endocarditis)”

Patients should be reminded that they need to complete the full course of antibiotic therapy to ensure their mastitis does not recur. Specific instructions regarding antibiotic administration should be given to the patient.

Patients should also be reassured that the above recommended antibiotics may be used during breastfeeding. Only small amounts pass through to the milk and any effects on the baby are usually temporary. The importance to the baby of continued breastfeeding far outweighs the temporary effects of the antibiotics. Effects can include restlessness, diarrhoea, and a sore bottom for the baby. If the patient develops diarrhoea (> 3 loose stools in a 24 hour period) this may be due to

antibiotic-associated diarrhoea. If the diarrhoea fails to settle or worsens then she should see her GP to exclude *Clostridium difficile* infection. This infection is associated with all antibiotics but it is very uncommon in healthy women and may be self-limiting.

Alternative treatments

Various alternative or complementary therapies are reported in the literature as treatments for mastitis. These include acupuncture and homeopathic remedies.

Presently there is not sufficient evidence to warrant the recommendation of these alternative treatments for mastitis.

As these are merely complementary, the first line of treatment for mastitis should always be based on the best available evidence as contained within these guidelines.

[Back to Contents](#)

14. Follow up and recurrent mastitis

Clinical response to the above management is typically rapid and dramatic.

If symptoms fail to resolve, differential diagnosis should be considered. Further investigations may be required to confirm resistant bacteria, abscess formation, underlying mass, ductal thrush or inflammatory or ductal carcinoma. More than two or three reoccurrences in the same location warrant evaluation to rule out underlying mass. Recurrent mastitis may occur as a result of over supply and poor drainage. This should be addressed and there must be an immediate referral to a lactation consultant at every admission.

There may be a role for decolonisation treatment of patients with recurrent staphylococcal mastitis, these patients should be referred to the ID service.

Breastmilk cultures

Occasionally it may be necessary to consider taking a breastmilk sample if the patient's clinical picture suggests further investigation i.e. has had recurrent mastitis or is not responding to treatment. This should be considered on a case by case basis and not as routine general practice.

The lactation consultant should be involved in the decision making along with a clinician.

[Back to Contents](#)

15. Complications

a) Breast engorgement

Breast fullness commonly occurs between the second and fifth day following delivery and the onset of lactogenesis II. Then there is a significant increase in the volume of milk being produced. At this time, the breasts feel firm, heavy and warm, and the milk flows readily: this is a normal physiological response. It is not unusual for the breast to feel hot and look flushed.

Breast engorgement occurs as a result of venous and lymphatic stasis and obstruction of the lactiferous ducts. Over-distension of the alveolar cells causes the breasts to become hard, hot, painful, oedematous and shiny. When the breasts are engorged, it is difficult to get milk flowing. Redness and inflammation may be present: this is a pathological response.

If engorgement of the breasts is allowed to persist, a protein in the milk, feedback inhibitor of lactation (FIL), will signal the body to stop producing milk. It is therefore important to facilitate ongoing effective breast emptying. Untreated breast engorgement can lead to a blocked milk duct and subsequent mastitis.

Treatment for breast engorgement includes frequent, effective breastfeeding from the affected breast, gentle breast massage, hand expression, analgesia, skin to skin contact and breast cooling in-between feeds.

[Back to Contents](#)

b) Cracked nipples

Trauma to the nipples during breastfeeding is most often caused by poor attachment of the baby to the breast. All patients with cracked nipples require further support from a midwife or lactation consultant, who should ensure that the mother positions her baby correctly and achieves good attachment to prevent further trauma. [Positioning for breastfeeding](#) describes how to achieve and recognise effective positioning and attachment.

The baby should be assessed for tongue tie.

It is also important to remind the mother to pay particular attention to hand washing to prevent further or cross infection. It is now universally acceptable to advise women to use breastmilk and warmth to aid the healing process***

Note: The application of creams to prevent nipple trauma or pain is not recommended.

If, despite improvements to attachment and positioning, a cracked nipple persists and has visible bacterial infection signs such as a yellow discharge or a wound slough, an oral antibiotic may be prescribed as for mastitis above.

If there is not visible infection a referral to a lactation consultant is essential.

[Back to Contents](#)

c) Candida infection

It is important to remember that thrush is commonly misdiagnosed, under and over treated. It is therefore advisable to take a detailed history to ascertain if thrush is present. Generally nipple and areola thrush is seen after the patient is discharged into the community.

Nipple and areola thrush presents with a red shiny appearance that is often itchy with sharp stabbing pain on feeding. The nipples should be carefully observed with a magnifying glass to assess for any white spots.

If thrush is suspected the baby's mouth should be assessed for white spots on the cheeks, tongue or pharynx and the baby's anal area observed for red spots. Oral thrush in the baby should be treated with nystatin oral suspension 0.5 – 1ml 4 times a day. For areola, nipple thrush it is recommended that clotrimazole cream 1% be applied three times a day after feeds. This treatment should continue for a further 10 - 14 days after the symptoms have subsided.

Ductal thrush

Ductal thrush presents with specific symptoms that help in confirming the diagnosis. For this reason a lactation consultant should be contacted.

Treatment for Ductal thrush requires ID approval and must be discussed on a case by case basis with ID services.

Fluconazole 100mg once daily for a minimum of 7 days (see Heinig et al and prescribing notes below). It is important that the prescriber follows up the patient closely and adjusts the dosage accordingly in line with her symptoms. Refer to the BNF for precautions when prescribing fluconazole. At ADHB the use of fluconazole requires approval from the ID Team.

It is unlikely that the infant will need to be prescribed oral nystatin suspension if the mother is taking fluconazole.

[Back to Contents](#)

d) Chronic breast pain

Some women may experience an ongoing, deep, burning breast pain occurring during and between breastfeeds. A cardinal sign of ductal thrush is the pain becomes worse at night. Recent studies suggest that in some cases deep breast pain can be caused by a bacterial *S. aureus* infection. Bacterial lactiferous duct infection can be present independently of mastitis or may develop subsequent to mastitis. It is possible that a combination of a candida and bacterial infection may be present. In this instance it may be necessary to treat with both antibiotic and anti-fungal therapy. Women with nipple trauma are more susceptible to bacterial ductal infections. A referral to a lactation consultant is important with any breast pain.

[Back to Contents](#)

e) Pus in breastmilk

It is recommended that women continue to breastfeed.

Assess for cause:

- A small lump in breast may resolve with continued breastfeeding
- An abscess is a walled-off collection and pus does not enter the breastmilk
- If obvious pus, can be hand expressed or removed by breast pump discard, change container and continue collection when clear breastmilk observed
- Clear expressed breast milk may be used or breastfeeding continued
- Send 'pus' specimen to laboratory if antibiotics have not been commenced, thick milk with accompanying symptoms of pain may indicate thrush infection
- Refer if medical opinion required
- It is likely that this patient will require a breast USS
- Babies under paediatric care – notify paediatrician
- Document assessment, management plan, and outcome
- Prompt referral to the lactation service is recommended

Note: Thickened milk or string like milk solids may indicate previous blocked duct, the water content has been reabsorbed and the milk solids only obtained until the blockage cleared. The milk obtained is safe for the baby and the mother should continue breastfeeding.

[Back to Contents](#)

f) Blood in breastmilk

Recommend that the mother continue breastfeeding.

Assess for cause:

- Bleeding cracked nipple – nipple trauma refer to Infant Feeding – Breastfeeding policy (see [associated ADHB documents](#) section)
 - Strong hand or breast pump expressing may cause a duct blood vessel (commonly known as “rusty pipes”) to burst
 - No obvious cause - usually resolves over a few days, continue to breastfeed
 - Refer to the lactation consultant service for advice
- i. Stop expressing if possible, or ensure only light hand or minimum setting for electric breast pump if expressing is required;
 - ii. Make sure pumping equipment fits correctly and not the cause of further trauma;
 - iii. Expected outcome – bleeding should resolve spontaneously within 24 - 48 hours;
 - iv. Refer to lactation consultant if mother requires reassurance;
 - v. Refer for medical opinion if prolonged bleeding;
 - vi. Document the assessment, management plan, and outcome.

Note: If the patient is Hepatitis C positive she should be provided with information on the possible risks associated with Hepatitis C. Nipple trauma should be prevented, it is recommended she express and discard milk until signs of blood in the milk have ceased.

[Back to Contents](#)

g) Breast abscess

Approximately 3% of mastitis cases result in a breast abscess. Most are caused by inappropriate management of mastitis or sudden cessation of breastfeeding during mastitis. All patients suspected of having a breast abscess should be referred to the lactation consultant.

All confirmed or suspected breast abscesses should be clerked and admitted into hospital for appropriate management. (See [referrals to breast care team flowchart](#).)

Clinical features

The abscess may present as a well defined area of breast which remains hard sometimes fluctuant, red, and tender despite treatment. The initial systemic symptoms and fever may have resolved. Some early breast abscess collections are difficult to detect clinically.

Ultrasound is an adjunct to clinical assessment and may identify a fluid collection.

Should the patient present with a pyrexia > than 38.5 °C blood cultures should be done together with U&Es, FBC and CRP. The patient may require IV fluid therapy if she is clinically dehydrated.

Ultrasound and needle aspiration of breast abscess

- A full history and clinical examination must precede ultrasound examination
- The preferred location for USS of the lactating breast is Greenlane (Mammography Dept level 6 Greenlane Clinical Centre)
- Ultrasound examination should be carried out, the size and extent of the abscess cavity documented, and the presence of any loculi recorded
- Local anaesthetic skin infiltration should be used, followed by ultrasound guided wide bore needle to decompress the abscess cavity
- A sample of aspirate should be dispatched to microbiology for culture and sensitivity testing, and documented (volume and type aspirated) in the clinical record
- Details of current or recent antibiotic treatment should be highlighted on the Pathology form and in the clinical record
- Clinical review and repeat ultrasound scans should be planned, as a second and third aspiration may be necessary
- IV antibiotics should be administered to the patient as soon after diagnosis as possible
- This patient needs to be clinically assessed, admitted and clerked

If MRSA infection is confirmed this should be discussed with the ID service, lactation consultant and a paediatrician.

Decompression of the abscess should alleviate pain and facilitate continued breastfeeding from the affected side. Breastfeeding may be too painful in spite of analgesia and support from the lactation consultant and therefore the patient

should be expressing milk from the affected breast until she is able to resume breastfeeding, the milk can be safely given to her baby via a cup or supply line at the unaffected breast. During this time breastfeeding can continue from the unaffected side.

Patients should be reassured that continued breastfeeding is safe for their baby.

Intravenous antibiotic therapy for breast abscess

Condition	Antibiotics	Dose
Breast abscess	flucloxacillin	1g q6h IV, changing to oral flucloxacillin as below once improved**, for total duration 5-7 days***
Breast abscess (penicillin rash*)	cephazolin	1g q8h IV, changing to oral cephalexin as below once improved**, for total duration 5-7 days***
Breast abscess (penicillin anaphylaxis or uncertain reaction)	clindamycin (ID pre-approval required)	450 mg po tds 5-7 days** (excellent bioavailability so IV required if oral intake impossible). Swallow whole with a glass of water; cease treatment immediately if diarrhoea develops.
Breast abscess (penicillin anaphylaxis or uncertain reaction) and oral intake not possible	clindamycin (ID pre-approval required)	300 – 600mg q8h IV until oral intake possible then switch to oral as above, total duration 5-7 days***

Oral antibiotic therapy for breast abscess (following completion of IV therapy**)

Condition	Antibiotics	Dose
Breast abscess	flucloxacillin	500mg qid po, one hour before meals & last thing at night , for 5 days***
Breast abscess (penicillin rash*)	cephalexin	500mg tds po for 5 days***
Breast abscess (penicillin anaphylaxis or uncertain reaction)	clindamycin (ID pre-approval required)	450 mg tds po 5 days***. Swallow whole with a glass of water; cease treatment immediately if diarrhoea develops.

* For patients with a history of penicillin causing a severe rash, clindamycin may be a more appropriate choice. Please discuss with the ID service for pre-approval..

All patients known to be colonised with MRSA should be discussed with the ID service so the most appropriate antibiotic can be chosen.

** Switch patients to oral antibiotic when the following criteria are met; clinically improving, tolerating oral fluid; temperature $\leq 38^{\circ}\text{C}$ over preceding 24 hours and BP $\geq 90\text{mmHg}$.

*** NB: Longer treatment duration is seldom warranted. Resolution of all symptoms will not occur until some time after effective antibiotic treatment. According to Therapeutic Guidelines - Antibiotic version 14 2010 page 2 “keep duration of therapy as short as possible. Do not exceed 7 days without a proven indication for longer duration (e.g. endocarditis)”

Surgical incision and drainage of a breast abscess – emergency – refer to surgeons

If facilities for breast ultrasound are not available and the patient presents with a clinically fluctuant abscess, surgical drainage may be required urgently. This may also be necessitated by necrotic skin and soft tissue involvement.

In the absence of a breast ultrasound, Fine Needle Aspiration (FNA) should be performed before an incision is made if the abscess is not showing evidence of pointing, with an USS booked for the next available slot at GCC – The patient must be referred to The Lactation Consultant & the “Breast Team”.

IV antibiotic therapy should be commenced as soon as possible.

Non pointing abscess – surgical procedure

- The surgical incision should follow skin crease lines. Consider the incision placement that will best facilitate drainage, even if an inframammary incision is required BMJ volume 297 JM DIXON 10/12/88 ROYAL INFIRMARY EDINGBURGH
- A surgical incision close to the areola may preclude breastfeeding during recovery, so care should be taken in planning an incision that best facilitates dependent drainage and continued breastfeeding
- Adequate surgical drainage is crucial and digital interruption of loculi will be required, and this is best performed under a general anaesthetic
- If available, a diagnostic breast ultrasound will be valuable in documenting the extent of the abscess, assisting with incision planning, and may help avoid a repeat surgical drainage procedure

Antibiotic therapy for breast abscess – please see above section

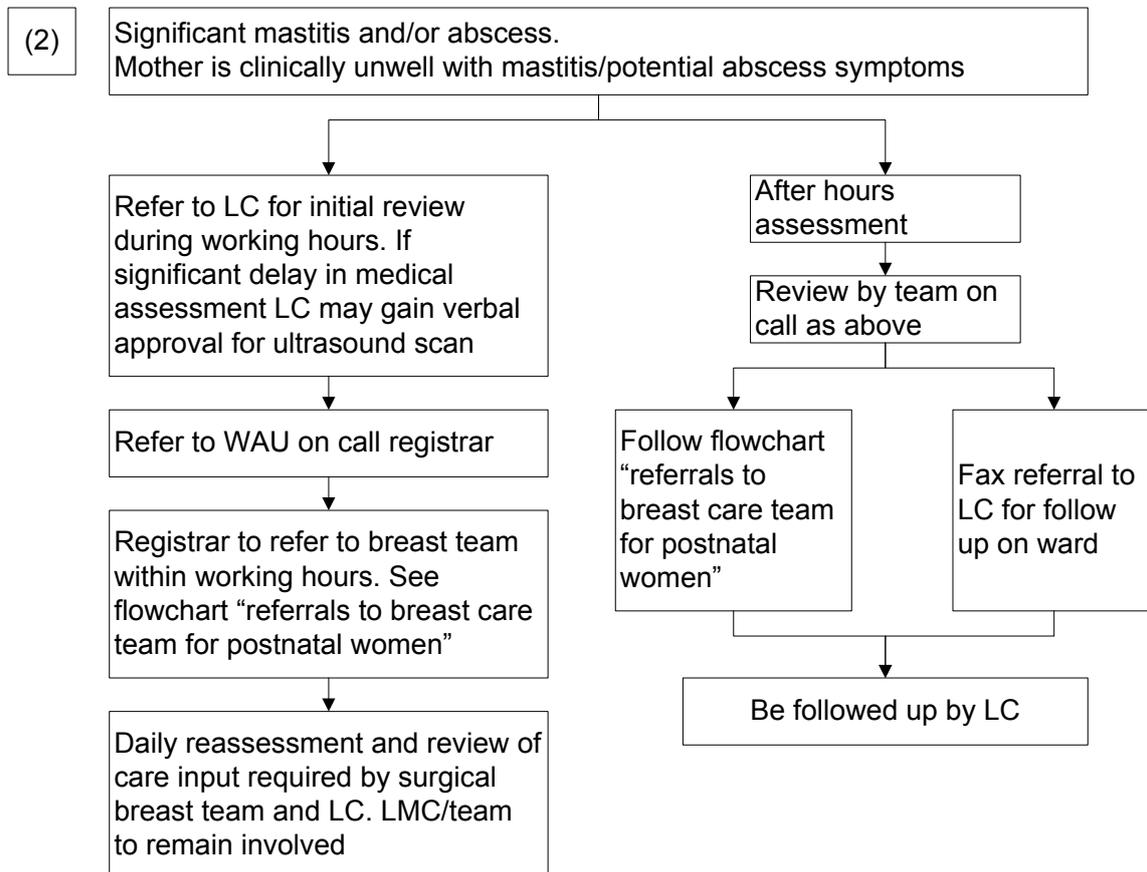
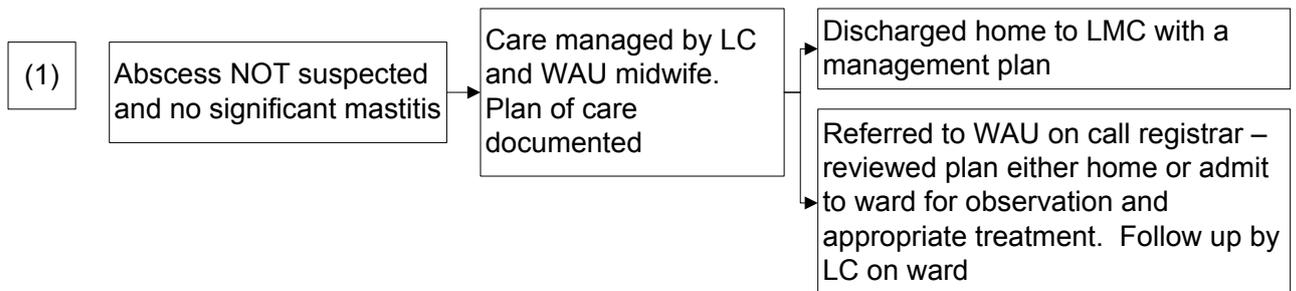
Post operatively, loose packing with Seasorb will be required and then covered with an Allevyn dressing, and there will be a need to change the packing to allow healing by secondary intention. Breastfeeding is to continue, the lactation consultant needs be involved in this patient's care.

[Back to contents](#)

16. Flowchart: Mastitis care pathway

Point of entry

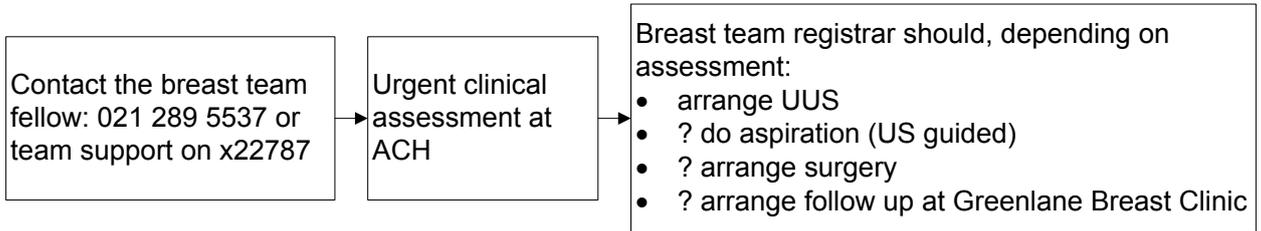
- AED
- APU
- WAU



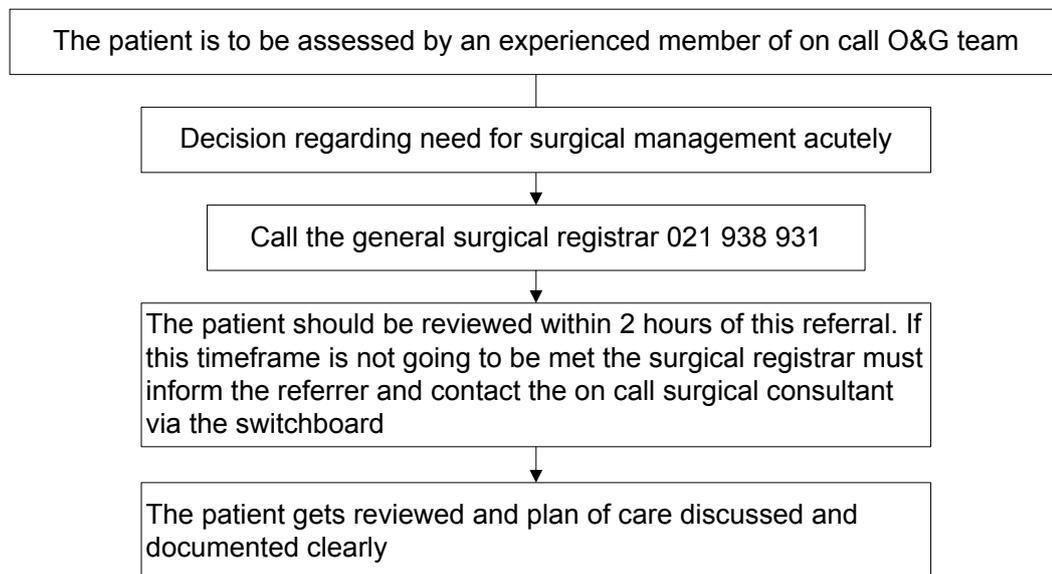
[Back to Contents](#)

17. Flowchart: Referrals to breast care team for postnatal women

(1) During working hours – Monday to Friday 0800 to 1600



(2) After hours if there is a serious clinical concern:



Please note:

- Adequate analgesia must be given at all times pending assessment, and antibiotics started by verbal order if needed
- If there is significant delay in assessment, an ultrasound may be arranged prior to assessment by the surgical team
- These women should be handed over to the next O&G team coming on if their care involves a change of shift
- All referrals after hours for breast abscess will be handed over to the breast team the next morning and noted on the computer list held by the breast team
- Ongoing responsibility of these patients will be with the breast team if an abscess or mastitis is confirmed until the problem is resolved

[Back to Contents](#)

18. Supporting evidence

- Amir et al. [A case-control study of mastitis: nasal carriage of Staphylococcus aureus](#). BMC Family Practice 2006; 7: 57
- Behari et al. [Transmission of methicillin-resistant Staphylococcus aureus to preterm infants through breastmilk](#). Infect Control Hosp Epidemiol. 2004 Sep;25(9):778-80
- Briggs et al Drugs & pregnancy in Lactation (8th Ed.) Philadelphia: Lippincott Williams & Wilkins, 2008
- Guidelines and Audit Implementation Network (GAIN) [Guidelines on the treatment, management & prevention of mastitis](#)
- Gastelum et al [Transmission of community-associated methicillin-resistant Staphylococcus aureus from breastmilk in the neonatal intensive care unit](#). Pediatr Infect Dis J. 2005 Dec;24(12):1122-4
- Heikkila et al [Inhibition of Staphylococcus aureus by the commensal bacteria of human milk](#). Journal of Applied Microbiology 2003; 95(3): 471-478
- Heinig et al [Mammary Candidosis in Lactating Women](#). D. J HUM Lact 1999; 15: 281-288
- Kawada et al [Transmission of Staphylococcus aureus between healthy, lactating mothers and their infants by breastfeeding](#). J Hum Lact. 2003 Nov;19(4):411-7
- BNF 61, British National Formulary. London: Pharmaceutical Press, 2011
- Antibiotic Expert Group. Therapeutic Guidelines: Antibiotic. North Melbourne: Therapeutic Guidelines Limited, 2006.

[Back to Contents](#)

19. Associated ADHB documents

- [Infant Feeding - Breastfeeding](#)

[Back to Contents](#)

20. 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.

[Back to Contents](#)

21. 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.

[Back to Contents](#)