GAIN

GUIDELINES AND AUDIT
IMPLEMENTATION NETWORK

# GUIDELINES ON THE TREATMENT, MANAGEMENT & PREVENTION OF MASTITIS

AUGUST 2009

# CONTENTS

All statements in *"italics"* are direct quotes from the stated references.

# FOREWORD

**Guidelines on the Treatment, Management & Prevention of Mastitis**

These guidelines have been published by the Guidelines & Audit Implementation Network (GAIN), which is a team of health care professionals established under the auspices of the Department of Health, Social Services & Public Safety in 2008.

The aim of GAIN is to promote quality in the Health Service in Northern Ireland, through audit and guidelines, while ensuring the highest possible standard of clinical practice is maintained.

This guideline was produced by a regional multi-disciplinary group of health professionals with representation from voluntary support and chaired by Janet Calvert, Regional Breastfeeding Coordinator at the Public Health Agency.

GAIN wishes to thank all those who contributed in any way to the development of these guidelines.

**Dr T Trinick**
Chairman of GAIN

# INTRODUCTION

Mastitis is a common 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.

In 2007 the Regulation and Quality Improvement Authority (RQIA) and 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 developed the new guidelines, 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. The details of the research consulted are provided in the supporting evidence table document, available to view at **www.gain-ni.org**. These guidelines will be reviewed in 2012 in line with GAIN requirements or sooner in light of new emerging evidence.

## Definition of mastitis

Mastitis is an inflammatory condition of the breast that may or may not be accompanied by infection.[1] 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.[2]

## Incidence of mastitis

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%.[1] A recent study from Glasgow suggests an incidence of 18%.[3] 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.[4,5]

Recent studies have shown that approximately half of all cases occur in the first four weeks of starting breastfeeding.[3,4,6] However mastitis can also occur at any stage during lactation and particularly when the number of breastfeeds or milk expressions are suddenly reduced.

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

## 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.[7]

## Pathology of mastitis

Lactational mastitis happens when pressure from stagnant or excess milk builds within the alveoli. Overdistention 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.

### Microbiology of mastitis

The most common organism found in cases of mastitis and breast abscess (a complication of mastitis) is *Staphylococcus aureus. Esherichia coli* (or other gram negative bacteria), Bacteroides and streptococci (alpha, beta and non-haemolytic) are sometimes found, and these latter have, in a few cases, been linked to neonatal streptococcal infection. However, there is no significant correlation between bacterial counts and severity of symptoms. Pathogens such as *S. aureus* may be found in breastmilk where there is no clinical manifestation of mastitis and no adverse effect to the infant,[8] results.

## 2. PREDISPOSING FACTORS

Factors which predispose a woman to mastitis include:

**Milk Stasis**

- 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.

**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;

**Other Factors**

- Past history of mastitis;
- Local trauma to breast.

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

## 3. DIAGNOSIS

Women who suspect they have mastitis will usually refer to their GP, midwife or health visitor 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 woman's breast and carrying out observations of temperature, pulse and respirations to confirm if two or more of the following clinical features are present:

- red, swollen, inflamed area of the breast;
- breast is hot to touch;
- pyrexia of >38°C;
- flu-like symptoms (chills, headache, muscle aches);
- painful lump (blocked duct).

### Conservative management of lactational mastitis

It is important to begin by talking to the woman to elicit information to help in finding out the underlying cause of her mastitis. This will 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 will involve taking a careful feeding history and identifying predisposing factors. Appendix 1 contains a list of useful questions to help in this regard.

## 4. SELF-MANAGEMENT GUIDELINES

The basic principles underlying the conservative management of mastitis are: empty the breast, heat, rest.[7,9]

1. 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 woman should express milk from the affected breast by hand, by pump* or both. Women 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.

2. If needed, women should be reassured that it is unlikely their baby will be harmed by breastfeeding during mastitis. Only in unusual circumstances would it be necessary to temporarily suspend breastfeeding and maintain lactation by milk expression.

3. Those supporting a woman 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 will encourage the let down reflex and aid milk flow. All breastfeeding women should be taught how to hand express in the early days after birth so that they can use the technique as needed to manage early signs of mastitis or during an episode of mastitis.

4. To remove milk from the inflamed breast as effectively as possible, women 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 a breast pump supplier.

5. It may be helpful to support the woman 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.

6. Oral anti-inflammatory and analgesic** medication may be started if there are no contra-indications. Ibuprofen 400mg three to four times a day after food and/or paracetamol 1g four times a day can be recommended to treat the inflammation and pyrexia.

7. Alternate hot and cold compresses using clean flannels or wash cloths can be useful to aid milk flow and to relieve discomfort. Hot compresses should be used to assist milk flow before feeding or expressing. Cold flannels can be used to reduce swelling between feeding or expressing.[10]

8. Gentle massage of the breast will help to stimulate the let-down reflex prior to and during feeding or expression of milk. The fingertips can be used in light stroking or circular movements. Care must be taken to avoid undue pressure as this can cause trauma and further inflammation. (Women may have learned this technique if they were taught to hand express earlier.)

9. Family support is important to allow the woman 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 woman's recovery if they formula feed the baby and miss out breastfeeds.

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

**NOTE: aspirin is not suitable for use in mastitis.

**The woman should be advised to seek urgent 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. If at any point there is a further deterioration in her condition she should be advised to contact a health professional or the out of hours GP service.

A mastitis care management flow chart has been developed to support these principles (Appendix 4). It is recommended that the flow chart is used in conjunction with these guidelines and that medical staff also refer to the mastitis pharmacological management flow chart at Appendix 5.

If a problem with breastfeeding technique is suspected then assessment should be undertaken. This should be by an appropriately trained health professional such as the midwife, health visitor, breastfeeding coordinator or volunteer supporter.

Where possible, observation of a full feed will assess attachment and positioning technique and ascertain if there are any particular concerns about milk supply or trauma to the nipples. See Appendix 2 on effective positioning and attachment for breastfeeding. A feeding assessment should be carried out using the UNICEF UK Baby Friendly Initiative feeding assessment form available from **www.babyfriendly.org.uk** and included with these guidelines as Appendix 3.

## 5. PHARMACOLOGICAL MANAGEMENT

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 woman implementing the recommended self-management practices, the woman should seek urgent 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 woman. **In severe cases it may not be desirable to wait**.

## Antibiotic therapy

| Condition | Antibiotics | Dose |
|---|---|---|
| Mastitis | First-line flucloxacilllin | 500mg four times a day for 10-14 days |
| Mastitis and allergic to penicillin | First-line erythromycin | 500mg four times a day for 10-14 days |
| | Second-line clindamycin | 300mg four times a day for 10-14 days |

Women should be reminded that they need to complete the full course of antibiotic therapy to ensure their mastitis does not recur.

Women 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. Effects can include restlessness, diarrhoea, and a sore bottom for the baby. In the case of clindamycin, however, medical attention should be sought if the woman develops diarrhoea or if blood or mucus is present in the baby's stools.

The mastitis pharmacological management flow chart (Appendix 5) is recommended as an aide memoir for any antibiotic therapy. It can be displayed as a poster for ease of reference.

## Investigations

Laboratory investigations and other diagnostic procedures are not routinely carried out for mastitis.

Breastmilk culture and sensitivity testing should only be considered in the following cases;

- no response to antibiotic treatment within two days;
- recurrent mastitis;
- a hospital acquired infection;
- severe and unusual cases.*

* NOTE: this is when symptoms worsen despite all self-help measures being undertaken alongside effective and frequent breastfeeding. Breastmilk samples to be sent for culture and sensitivity must be collected carefully to avoid contamination. The following precautions should be taken to ensure a clean specimen is obtained.

## Precautions to take when obtaining a breastmilk sample

Breastmilk samples to be sent for culture and sensitivity must be collected carefully to avoid contamination. The following precautions should be taken to ensure a clean specimen is obtained.

1. Effective hand washing and cleansing of the nipple area with water, and drying with a disposable paper towel prior to expression will reduce the risk of contamination and false positive culture results.

2. The expressed breastmilk from the affected breast should be hand expressed, with the first 10ml of milk being discarded.

3. The sample must then be collected from a midstream clean catch sample that is hand expressed directly into a sterile universal container. To avoid skin flora contamination, care should be taken to avoid touching the inside of the container with the nipple.

4. The breastmilk sample should be sent to the lab promptly as per local arrangements. Store in a refrigerator until the time of collection.

5. If an infant is premature or compromised, and milk culture is positive for Group A or Group B streptococcus infections or methicillin-resistant *S. aureus* (MRSA), it is necessary to discontinue feeding at this time. However, the mother should be advised to continue frequent expression to maintain lactation and to discard this milk until the infection has been successfully treated.

6. If a Group A or B streptococcus or MRSA infection is found in the breastmilk of the mother of a term healthy infant this should be discussed with a paediatrician and the mother supported to make an informed choice about feeding this milk to the baby. In some instances it may be appropriate to withhold breastmilk temporarily until successfully treated.

If a streptococcal or MRSA infection is confirmed it is also important to observe and monitor the baby's general condition. If there are any clinical signs of infection in this instance then the baby should be assessed by a paediatrician and treated with antibiotics as necessary.

## Recurrent mastitis

Where a woman has managed an episode of mastitis without antibiotic therapy and mastitis recurs, a full case history should be taken to try and identify the cause or causes. Antibiotic therapy should be considered.

Where a woman has obtained some relief from mastitis but it recurs following the end of antibiotic therapy, it may be desirable to obtain a milk culture to help target further medical therapy.[7]

# 6. COMPLICATIONS

## Breast engorgement

Breast fullness commonly occurs between the second and fifth day following delivery and the onset of lactogenesis, when 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.

Breast engorgement occurs as a result of venous and lymphatic stasis and obstruction of the lactiferous ducts. Over-distention 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, breast massage, hand expression and analgesia.[10]

## Cracked nipples

Trauma to the nipples during breastfeeding is most often caused by poor attachment of the baby to the breast. All mothers with cracked nipples require further support from a midwife, health visitor or breastfeeding specialist, who should ensure that the woman positions her baby correctly and achieves good attachment. Appendix 2 describes how to achieve and recognise effective positioning and attachment. Further information on effective attachment and positioning for breastfeeding is also available from **www.breastfedbabies.org** and from the "Off to a Good Start"

booklet published by the Health Promotion Agency for Northern Ireland (HPA), (now Public Health Agency).

### Treatment for cracked nipples

In addition to improving attachment to prevent further trauma, recommended treatment for cracked nipples includes the application of a small amount of purified lanolin ointment or white soft paraffin. This should be applied to the abrasion only, following breastfeeds, until healing has occurred. The aim of this treatment is to help facilitate moist wound healing.

NOTE: The routine 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, a topical antibiotic (eg muciprocin) ointment may be appropriate. In more severe cases an oral antibiotic may be required.

## Candida infection

In cases where mastitis symptoms have been successfully treated and patients continue to experience or to develop burning breast pain then candida (thrush) infection should be considered as a cause. Use of antibiotics may predispose susceptible women to candida infections. For further information on the symptoms of candida while breastfeeding please refer to information for health professionals provided by the Breastfeeding Network available at **www.breastfeedingnetwork.org.uk/pdfs/BfN_Thrush_leaflet_Feb_2009.pdf**

It is important in all cases of candida infection during lactation that both woman and baby receive anti-fungal treatment. Before any anti-fungal treatment is started, care should be taken to exclude other causes of breast and nipple pain, such as poor attachment of the baby to the breast.

### Anti-fungal treatment during lactation

Fluconazole 400mgs loading dose then 200mgs once daily for a minimum of 14 days (7 days after symptoms have cleared); *
AND topical miconazole cream to nipples, post feed;
AND topical miconazole oral gel to baby's mouth four times a day.

* it is acknowledged that this dose differs from the Breast Feeding Network leaflet recommendations

Fluconazole and miconazole oral gel use is outside of the terms of their licences. However there is evidence supporting their use in management of candidal mastitis. Oral miconazole is not licensed in babies <4 months but may be used if necessary. Apply gel around the mouth with a clean finger. Take care not to touch the back of the throat. **Do not use a spoon**. Do not place any hardened gel in the baby's mouth. Replace the lid of the tube after use.

### Chronic breast pain

Some women may experience an ongoing, deep, burning breast pain occurring during and between breastfeeds, and this is often attributed to the candida infection. Recent studies suggest that in some cases deep breast pain can be caused by a bacterial *S. aureus* infection.[11] 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.

## Breast abscess

Approximately 3% of mastitis cases result in a breast abscess. Most are caused by inappropriate care management of mastitis or sudden cessation of breastfeeding during mastitis.

Where a breast abscess is suspected, a breast clinic referral should be sought on an individual basis. Contacting a doctor in the clinic directly is preferable to expedite referral to a breast surgeon and will ensure confirmation of diagnosis and prompt appropriate treatment.

## Antibiotic therapy for breast abscess

| Condition | Antibiotics | Dose |
|---|---|---|
| Breast abscess (outpatient) | Flucloxacillin for 10-14 days | 500mg oral four times a day |
| Abscess and allergic to penicillin (outpatient) | Clindamycin | 300mg oral four times a day for 10-14 days |
| Breast abscess (inpatient) | Flucloxacillin | 2g IV every 6 hours |
| Abscess and allergic to penicillin (inpatient) | Clindamycin | 900mg IV every 8 hours *(duration reviewed on an individual basis)* |

### Ultrasound and needle aspiration of breast abscess

1. A full history and clinical examination must precede ultrasound examination.

2. Ultrasound examination should be carried out, the size and extent of the abscess cavity documented, and the presence of any loculi recorded.

3. Local anaesthetic skin infiltration using an ultrasound guided wide bore needle should be used for decompressing the abscess cavity.

4. A sample of aspirate should be dispatched to microbiology for culture and sensitivity testing, along with details of current or recent antibiotic treatment.

5. Clinical review and repeat ultrasound scans should be planned, as a second and third aspiration may be necessary.

MRSA may be associated with breast abscess and can be isolated by aspiration. In these cases appropriate antibiotic therapy is required and further testing of the breastmilk should be carried out so that breastfeeding can continue as soon as possible.

If MRSA infection is confirmed this should be discussed with a paediatrician so that the woman can be supported to make an informed choice about continuing to breastfeed. It may be appropriate to interrupt breastfeeding until successful treatment is confirmed, however it is important that the woman is advised to express and discard her breastmilk to maintain lactation until breastfeeding can resume. In this instance it is important to observe and monitor the baby's general condition. If there are any clinical signs of infection then the baby should be assessed by a paediatrician and treated with antibiotics as necessary.

Decompression should alleviate pain and facilitate continued breastfeeding from the affected side. If the abscess is close to the areola, breastfeeding may be too painful and therefore the woman should be advised to express milk from the affected breast until she is able to resume breastfeeding from that breast. During this time feeding can continue from the unaffected side.

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

### Surgical incision of a breast abscess

If facilities for breast ultrasound are not available and the woman presents with a clinically fluctuant abscess, surgical drainage may be required urgently.

1. In the absence of a breast ultrasound, aspiration should be performed before an incision is made if the abscess is not showing evidence of pointing, clinically.

2. The surgical incision should follow Langer's lines. Consider the incision placement that will best facilitate drainage, even if an inframammary incision is required.

3. 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.

4. Adequate surgical drainage is crucial and digital interruption of loculi will be required, and this is best performed under a general anaesthetic.

5. 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.

Post operatively, loose packing with Aquacel will be required, and there will be a need to progressively withdraw the packing to allow healing by secondary intention.

## 7. MASTITIS PREVENTION AND MANAGEMENT

### Prevention: key points

- Ensure effective positioning and attachment.
- Encourage frequent, baby led feeding.
- Prevent nipple trauma through good attachment.
- Keep woman and baby together so the woman is able to respond to feeding cues.
- Avoid missing feeds and leaving long gaps between feeds.
- Avoid formula supplements.
- 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).

## Management: key points

- Routinely examine postnatal women who complain of 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.
- If possible, examine the infant for signs of candida or 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.
- 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 women stopping breastfeeding early. It is therefore important that women 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 women to cope with and appropriately manage their symptoms.

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

All women with mastitis should be provided with written information and telephone contact details of professional and voluntary breastfeeding support organisations. An information leaflet for women *Mastitis* and *breastfeeding* based on a publication by the Breastfeeding Network (BfN) is available to support these guidelines. It is recommended that all breastfeeding women are provided with this leaflet in the early postnatal period. Copies can be obtained from GAIN (**www.gain-ni.org**).

## 8. 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.

## 9. AUDIT

We recommend that Audit Departments within HSC Trusts audit the implementation of these guidelines and the appropriate usage of the Mothers Guide to mastitis and breastfeeding using the tools provided in Appendix 7 and 8.

These tools are also available on the GAIN website at **http://www.gain-ni.org/Audit_Tools/index.asp**

# APPENDICES

# APPENDIX 1

## Breastfeeding history questions for 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, eg 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 more busy 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?
- Do you feel that you may have more milk than your baby needs?
- Are you using nipple shields or a dummy?
- Is your baby having bottles of infant formula?

# APPENDIX 2

## Effective positioning and attachment for breastfeeding

### Positioning for breastfeeding

Some basic principles that will 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.
- 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 back.
- The baby starts a breastfeed with the nose opposite the nipple.
- When the mouth is wide open the baby should be brought quickly to the breast with the chin leading.
- The baby's body should be held close to the woman's body.
- The woman'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, when a baby finishes a breastfeed, 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:

- baby's mouth is wide open;
- chin is touching the breast;
- cheeks are full and rounded;
- if visible, more areola is seen at baby's nose and top lip;
- the lower lip is curled back;
- rhythmic sucks and swallows are evident;
- feeding is comfortable for the woman.

# Breastfeeding assessment form

Baby's name: _____ Date of birth: _____ Gestation at birth: _____

Date of assessment: _____ Baby's age: _____ Birth weight: _____

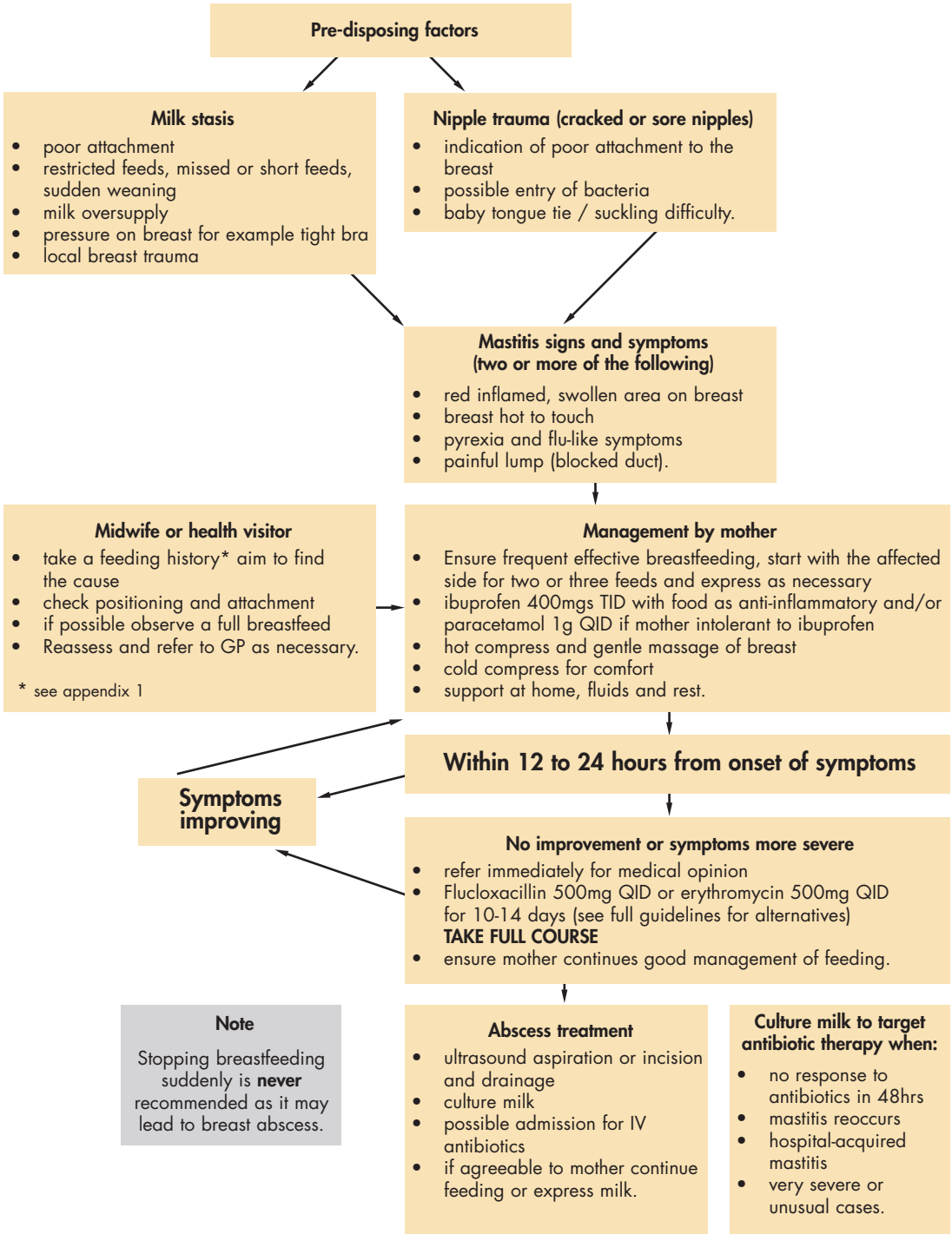
Last recorded weight: _____ on (date): _____

| What to observe/ask about | Answer indicating effective feeding | ✓ | Answer suggestive of a problem | ✓ |
|---|---|---|---|---|
| Urine output | At least 6 heavy wet nappies in 24 hours | | Fewer than 6 wet nappies in 24 hours, or nappies that do not feel heavy | |
| Appearance and frequency of stools<br>*NB: Not a reliable sign beyond 4 weeks* | 2 or more in 24 hours; normal appearance (i.e. at least £2 coin size, yellow, soft/runny) | | Fewer than 2 in 24 hours or abnormal appearance | |
| Baby's colour, alertness and tone | Normal skin colour; alert; good tone | | Jaundiced worsening or not improving; baby lethargic, not waking to feed; poor tone | |
| Weight (following initial post-birth loss) | Gaining weight | | Static weight or continued weight loss | |
| Number of feeds in last 24 hours | At least 6 - 8 feeds in last 24 hours | | Fewer than 6 feeds in last 24 hours | |
| Baby's behaviour during feeds | Generally calm and relaxed | | Baby comes on and off the breast frequently during the feed, or refuses to breastfeed | |
| Sucking pattern during feed | Initial rapid sucks changing to slower sucks with pauses and soft swallowing | | No change in sucking pattern, or noisy feeding (e.g. clicking) | |
| Length of feed | Baby feeds for 5 - 30 minutes at most feeds | | Baby consistently feeds for less than 5 minutes or longer than 40 minutes | |
| End of the feed | Baby lets go spontaneously, or does so when breast is gently lifted | | Baby does not release the breast spontaneously, mother removes baby | |
| Offer of second breast? | Second breast offered. Baby feeds from second breast or not according to appetite | | Mother restricts baby to one breast per feed, or insists on two breasts per feed | |
| Baby's behaviour after feeds | Baby content after most feeds. | | Baby unsettled after feeding | |
| Shape of either nipple at end of feed | Same shape as when feed began, or slightly elongated | | | |
| Mother's report on her breasts and nipples | Breasts and nipples comfortable | | Misshapen or pinched at the end of feeds<br>Nipples sore or damaged; engorgement or mastitis | |
| Use of dummy / nipple shields / formula? | None used | | Yes *(state which)*<br>Ask why: Difficulty with attachment? Baby not growing? Baby unsettled? | |

*If <u>any</u> boxes in right-hand column are ticked it is* ***essential to observe a full breastfeed and develop an individualised plan of care, including revisiting positioning and attachment and/or referring appropriately. Any additional concerns about the baby's well-being should be followed up as necessary****.*

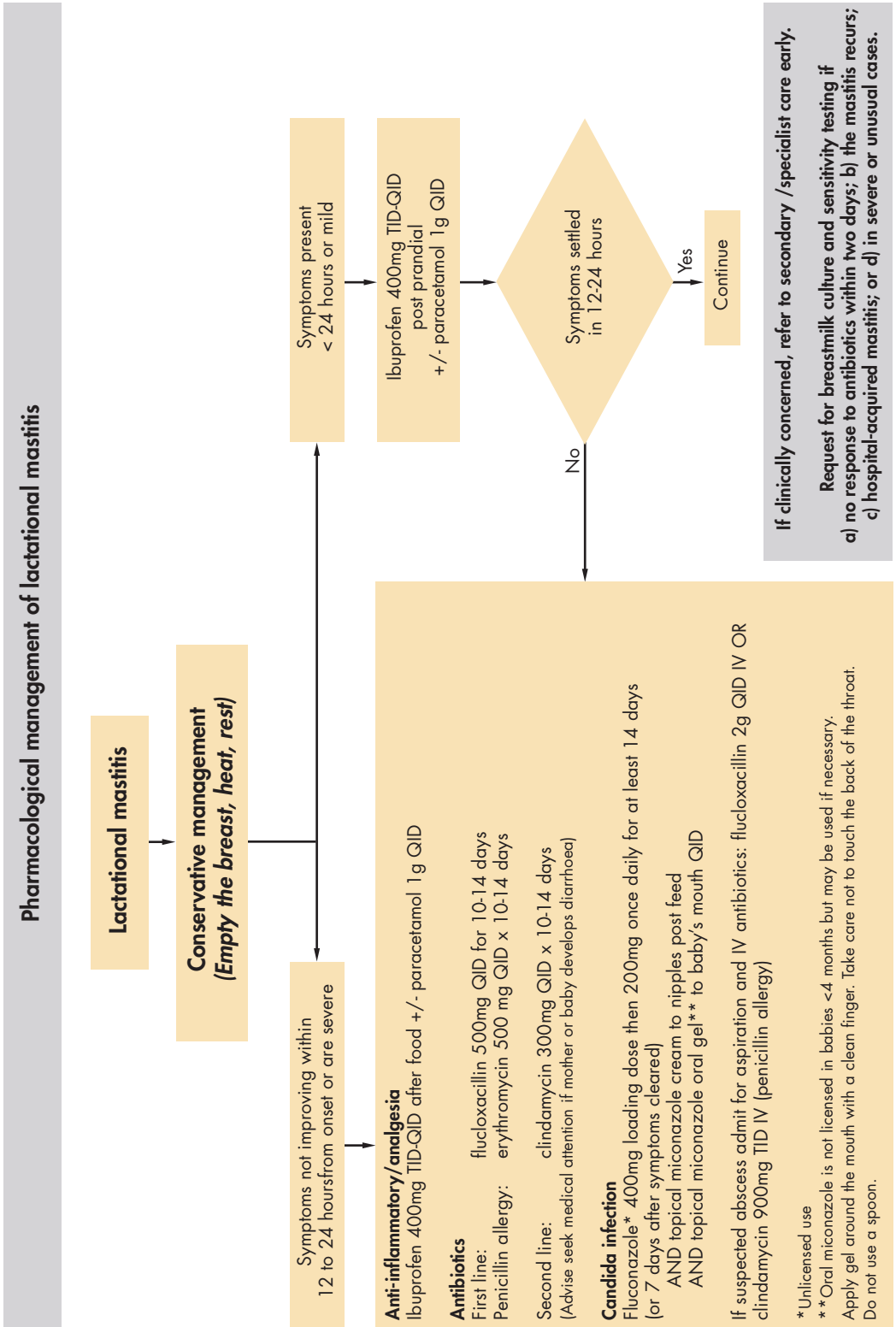
# APPENDIX 4

## Mastitis care management flow chart



# APPENDIX 5

## Mastitis pharmacological management flow chart



# APPENDIX 6

## Membership of mastitis working group

| Name | Title |
|---|---|
| Janet Calvert | Regional Breastfeeding Coordinator, Public Health Agency Chairperson (formerly Health Promotion Agency for Northern Ireland) |
| Gillian Anderson | Breastfeeding Coordinator, Antrim Hospital, Northern HSC Trust |
| Dr Lorraine Anderson | Consultant Obstetrician, Mater Hospital, Belfast HSC Trust |
| Angela M Carragher | Consultant Surgeon, Associate Postgraduate Dean for |
| | Foundation N Ireland Medical & Dental Training Agency |
| Bridget Dougan | Regulation and Improvement Manager, The Regulation and Quality Improvement Authority |
| Dr Siobhan Higgins | General Practitioner, Belfast |
| Esther Hylands | Community Midwifery Manager, South Eastern HSC Trust |
| Rosemary Kerr | Breastfeeding/Parentcraft Coordinator, Mid Ulster Hospital, Northern HSC Trust |
| Siobhan Livingston | Breastfeeding Peer Supporter, Bangor |
| Ann McCrea | Human Milk Bank Coordinator, Western HSC Trust |
| Dr Elaine McHenry | Consultant Microbiologist, Belfast HSC Trust |
| Helen McIlroy | Breastfeeding Coordinator, Royal Jubilee Maternity Service, Belfast HSC Trust |
| Julie Neill | Health Development Officer, Public Health Agency (formerly Health Promotion Agency for N Ireland) |
| Dr Roisin O'Kane | General Practitioner, Belfast |
| Fiona O'Neill | Pharmacist, Belfast HSC Trust |
| Dr Grace Ong | Consultant Microbiologist, Belfast HSC Trust |
| Nicola Porter | GAIN Manager |
| Dr Jill Stafford | Consultant in Emergency Medicine, South Eastern HSC Trust |
| Roberta Watson | Community Midwife, South Eastern HSC Trust |
| Bernie Webster | Breastfeeding Coordinator, Western HSC Trust |

# AUDIT TOOL – IMPLEMENTATION OF GUIDELINES ON THE TREATMENT, MANAGEMENT & PREVENTION OF MASTITIS

1. Hospital/GP Practice Code Number _____

2. Patient Code Number _____

3. Staff Discipline/Specialty _____

4. Assessment Date _____

5. Patient Age (years) <20 ☐ 21-30 ☐ 31-40 ☐ >40 ☐

6. Age of infant _____ weeks

7. Patient postal code ☐☐☐☐ ☐☐☐
   e.g. BT15 3AB

8. Are GAIN Guidelines on the treatment, management and prevention of mastitis used within your Trust or Practice? Yes ☐ No ☐

9. Have you referred to the GAIN documents Guidelines on the treatment, management and prevention of mastitis? Yes ☐ No ☐

**Assessment & Diagnosis**

10. Patient's presenting symptoms:

10.1 Red, swollen, inflamed area of the breast Yes ☐ No ☐

10.2 Breast is hot to touch Yes ☐ No ☐

10.3 Pyrexia of >38 degrees C Yes ☐ No ☐

10.4 Flu-like symptoms
(chills, headaches, muscle aches) Yes ☐ No ☐

10.5 Painful lump (blocked duct) Yes ☐ No ☐

11. Was a feeding history taken? Yes ☐ No ☐

12. Was a possible cause of mastitis identified? Yes ☐ No ☐

13. Had the patient:

13.1 Breastfed previous children? Yes ☐ No ☐

13.2 A past history of mastitis? Yes ☐ No ☐

14. Number of weeks breastfeeding before the onset of this episode of Mastitis _____ weeks

15. Number of hours or days with current pain/discomfort prior to contacting health professional? _____ hours or _____ days

**Treatment**

*Self-management:*

16. Was the GAIN leaflet for mothers given to the patient? Yes ☐ No ☐

17. Was the patient provided with verbal information on self management of mastitis? Yes ☐ No ☐

18. Did you check for problems with breastfeeding technique? Yes ☐ No ☐

19. Did you advise the women to use breast massage and hand expression of milk to alleviate symptoms? Yes ☐ No ☐

20. Was oral anti-inflammatory and analgesic medication discussed/advised? Yes ☐ No ☐

*Medication:*

21. Was antibiotic therapy prescribed? Yes ☐ No ☐

22. How long was the course of antibiotics? 7 days ☐ 10 days ☐

23. When was antibiotic therapy prescribed?

Within 24 hours of onset ☐ Beyond 24 hours of onset ☐ N/A ☐

24. Was repeat antibiotic therapy required for recurrence? Yes ☐ No ☐

25. Was a different antibiotic used? Yes ☐ No ☐ N/A ☐

**Complications**

Did the patient experience any of the following complications?

26. Breast engorgement Yes ☐ No ☐

27.1 Cracked nipples Yes ☐ No ☐

27.2 Was the mother referred for help or shown how to correctly position and attach the baby? Yes ☐ No ☐ N/A ☐

27.3 Was treatment of purified lanolin ointment or white soft paraffin recommended? Yes ☐ No ☐ N/A ☐

28.1 Candida infection Yes ☐ No ☐

28.2 If a candida infection was suspected was the possibility of attachment problems considered? Yes ☐ No ☐ N/A ☐

28.3 Was anti-fungal treatment prescribed? Yes ☐ No ☐ N/A ☐

28.4 If yes which anti-fungal medication was prescribed? Yes ☐ No ☐ N/A ☐

29.1 Did the patient present with Chronic breast pain? Yes ☐ No ☐

29.2 Did you treat or seek treatment for the following causes?

Candida infection Yes ☐ No ☐ N/A ☐

Bacterial infection Yes ☐ No ☐ N/A ☐

Both Yes ☐ No ☐ N/A ☐

30.1 Breast abscess Yes ☐ No ☐

| | | | |
|---|---|---|---|
| 30.2 Was antibiotic therapy prescribed? | Yes ☐ | No ☐ | N/A ☐ |
| 30.3 Was an ultrasound carried out? | Yes ☐ | No ☐ | N/A ☐ |
| 30.4 Was the abscess cavity decompressed using an ultrasound guided wide bore needle? | Yes ☐ | No ☐ | N/A ☐ |
| 30.5 Was a sample of aspirate sent for culture and sensitivity testing? | Yes ☐ | No ☐ | N/A ☐ |
| 30.6 As part of clinical review were repeat ultrasound scans carried out? | | | |
| 30.7 Were 2nd and/or 3rd aspiration necessary? | Yes ☐ | No ☐ | N/A ☐ |
| 30.8 Was MRSA infection tested for? | Yes ☐ | No ☐ | N/A ☐ |
| 30.9 If MRSA confirmed, was the mother advised to express and discard breastmilk? | Yes ☐ | No ☐ | N/A ☐ |
| 30.10 If MRSA confirmed, was the baby's general condition observed and monitored, and where infection present, assessed by paediatrician? | Yes ☐ | No ☐ | N/A ☐ |
| 30.11 Was surgical incision of the breast abscess required? | Yes ☐ | No ☐ | N/A ☐ |

30.12 Did surgical procedure follow advice from GAIN guideline? Yes ☐ No ☐ N/A ☐

**Investigations**

31.1 Was breastmilk sent for culture? Yes ☐ No ☐

31.2 What was the reason for breastmilk culture and sensitivity testing?

No response to antibiotic treatment within 2 days ☐ Recurrent mastitis ☐

Hospital acquired infection ☐ Severe and unusual cases ☐ N/A ☐

32. Please add any comments you may have in relation to mastitis and use of the GAIN mastitis guidelines

_____

_____

_____

_____

_____

Signed _____

Date _____

**Thank you for your participation in this audit**

# APPENDIX 8

## AUDIT TOOL – PATIENT LEAFLET "MASTITIS AND BREASTFEEDING"
**FROM GUIDELINES ON THE TREATMENT, MANAGEMENT & PREVENTION OF MASTITIS**

Please answer the below questions about the leaflet "Mastitis and breastfeeding." Please either tick or circle one answer per question and where required specify details.

1. Age (years) Up to 20 ☐ 21-30 ☐ 31-40 ☐ 40 & over ☐

2. Age of your baby _____ weeks

3. Postal code ☐☐☐☐ ☐☐☐
   e.g. BT15 3AB

4.1 Were you given the leaflet "Mastitis and breastfeeding" by a health professional? Yes ☐ No ☐

4.2 If Yes (to 4.1) – by who?

Community Midwife ☐ Health Visitor ☐ Doctor ☐

Other health professional ☐ please specify _____

4.3 If No (to 4.1) – where did you get a copy of the leaflet?

Hospital ☐ GP Surgery ☐

Website ☐ please specify _____

Other ☐ please specify _____

5. When did you receive the leaflet?

Before Mastitis symptoms began/in general post birth information ☐

During assessment of breast discomfort/Mastitis symptoms ☐

After diagnosis of Mastitis ☐ please specify _____ days

6. Please rate what you thought of the information contained in the leaflet.
On a scale of 1 to 5, 1 being strongly agree to 5 being strongly disagree.

| | **Strongly Agree** | **Agree** | **Neither** | **Disagree** | **Strongly Disagree** |
|---|---|---|---|---|---|
| 6.1 Easy to understand | 1 | 2 | 3 | 4 | 5 |
| 6.2 Advice was helpful | 1 | 2 | 3 | 4 | 5 |
| 6.3 Contacts/links useful | 1 | 2 | 3 | 4 | 5 |

7. When do you think would be the best time to be given the mastitis leaflet?

During pregnancy ☐

Before discharge from hospital ☐

First visit by community midwife ☐

First visit by health visitor ☐

When symptoms of mastitis start ☐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8. Please add any comments you may have in relation to information provided on mastitis

**Thank you for taking the time to complete this questionnaire**

## REFERENCES


1. World Health Organization. Mastitis. Causes and management. Geneva: WHO, 2000.

2. Foxman B, D'Arcy H, Gillespie B, Bobo JK, Schwartz K. Lactation mastitis: occurrence and medical management among 946 breastfeeding women in the United States. American Journal of Epidemiology 2002; 155(2): 103-14.

3. Scott JA, Robertson M, Fitzpatrick J, Knight C, Mulholland S. Occurrence of lactational mastitis and medical management: a prospective cohort study in Glasgow. International Breastfeeding Journal 2008; 3(21).

4. Amir LH, Forster DA, Lumley J, McLachlan H. A descriptive study of mastitis in Australian breastfeeding women: incidence and determinants. BMC Public Health 2007; 7: 62.

5. Kinlay JR, O'Connell DL, Kinlay S. Incidence of mastitis in breastfeeding women during the six months after delivery: a prospective cohort study. Medical Journal of Australia 1998; 169(6): 310-2.

6. Kvist LJ, Hall-Lord ML, Larsson BW. A descriptive study of Swedish women with symptoms of breast inflammation during lactation and their perceptions of the quality of care given at a breastfeeding clinic. International Breastfeeding Journal 2007; 2(2).

7. Betzold CM. An update on the recognition and management of lactational breast inflammation. Journal of Midwifery and Women's Health 2007; 52(6): 595-605.

8. Kvist L, Larsson B, Hall-Lord M, Steen A, Schalen C. The role of bacteria in lactational mastitis and some considerations of the use of antibiotic treatment. International Breastfeeding Journal 2008; 3(6).

9. The Academy of Breastfeeding Medicine Protocol Committee. ABM clinical protocol #4: mastitis. Breastfeeding Medicine 2008; 177-180.

10. Routine postnatal care of women and their babies. London: National Institute for Health and Clinical Excellence, 2006.

11. Eglash A, Plane MB, Mundt M. History, physical and laboratory findings, and clinical outcomes of lactating women treated with antibiotics for chronic breast and/or nipple pain. Journal of Human Lactation 2006; 22(4): 429-33.

Further copies of this guideline can be obtained by either contacting the GAIN Office or by logging on to the website.

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**ISBN Number: 978-1-906805-05-0**