

1. Introduction

This document sets out the University Hospitals of Leicester (UHL) NHS Trust's Policy and Procedures for the diagnosis, investigation and treatment of primary breast abscess for adults in secondary care.

This guideline does not apply to the management of infections following breast surgery (e.g. implant infections or infected seroma). Such cases should be discussed with microbiology and the breast surgeons. The management of mastitis is discussed in the women's antimicrobial guidelines available on INsite.

For surgical prophylaxis see separate guidelines available on INsite.

The antibiotic doses in this guideline are intended for adult patients with normal renal and liver function, unless otherwise stated. Refer to Microbiologist/ Pharmacist for further advice in these patients.

1.1. Definitions used in this guideline :

Breast abscess: a collection of pus within the breast

Lactational breast abscess: breast abscess developing in a lactating woman

Non-lactational breast abscess: breast abscess developing in a non-lactating woman

Subareolar abscess: Abscess around the nipple/areola

Peripheral breast abscess: abscess developing in the outer quadrants of the breast

1.2. Background ⁽¹⁾:

The main groups of breast abscesses are lactational, non-lactational and granulomatous.

Lactational breast abscess usually develops as a complication of lactational mastitis. This most often occurs due to milk stasis and subsequent infection with *Staphylococcus aureus*. Lactational mastitis is common, occurring in around 30% of lactating women worldwide. It most commonly occurs during the first 2-3 weeks post partum, but can occur at any stage of lactation, and often occurs during weaning. Lactational breast abscess is rarer, and occurs in 0.1-3% of lactating women. Lactational breast abscesses tend to be peripheral, and most commonly occur in the upper outer quadrant of the breast.

Non-lactational breast abscesses can be either subareolar or peripheral.

Subareolar abscesses usually occur as a complication of periductal mastitis. Periductal mastitis occurs in 5-9% of non-lactating women worldwide, and is usually due to either ductal damage, or age-related ductal changes (ductal ectasia), with subsequent bacterial infection.

Peripheral non-lactational breast abscesses often have no identifiable underlying cause but are associated with smoking, diabetes, rheumatoid arthritis, trauma and corticosteroid treatment. Non-lactational breast abscesses may be caused by *Staphylococcus aureus*, *Enterococcus* sp, and anaerobic bacteria.

Granulomatous mastitis is an inflammatory disease of the breast, thought to be an autoimmune reaction to secretions from the mammary ducts. The exact cause is unknown, and is often treated with antibiotics, corticosteroids or surgery. There is increasing evidence implicating the bacteria *Corynebacterium kroppenstedtii* with the condition, particularly with the cystic neutrophilic subtype of granulomatous mastitis, though it still remains controversial. ⁽²⁾ A study of 145 cases found that an episode typically resolves without treatment in an average of 5 months, and that time to resolution of symptoms did not differ between untreated women and women treated with medication.

Tuberculosis can rarely present with breast abscess. It should be considered in cases with known risk factors or not responsive to standard treatment. Primary Tuberculosis of the breast is rare, and infection in the breast usually occurs due to lymphatic spread. Cases of suspected Tuberculosis should be referred to the Tuberculosis clinic via [the referral pathway on insite](#).

Breast abscesses require prompt recognition and treatment. Untreated abscesses can result in systemic sepsis, particularly if the patient is immunocompromised. Undertreatment can also lead to recurrence, mammary duct fistula, and can lead to unplanned early cessation of breastfeeding.

Inflammatory breast cancer can mimic mastitis and abscess, so must always be considered..

2. Scope

All medical staff/prescribers assessing and treating adult patients with breast abscesses.

3. Recommendations, Standards and Procedural Statements

Assessment of the patient should include enquiring about risk factors for breast abscess, signs and symptoms associated with breast abscess, and an assessment of severity (outlined below).

3.1. Risk factors include (1,3) :

Milk accumulation:

- Poor infant attachment e.g. from 'tongue tie'
- Sudden cessation of breastfeeding without effective milk removal e.g. in mastitis
- Reduced number or duration of feeds
- Age >30 (thought to be related to milk stasis)

Ductal damage

- Smoking (nicotine accumulates in breast tissue and leads to ductal damage)
- Nipple damage e.g. piercing, eczema
- Trauma to breast
- Shaving or plucking areolar hair

Other:

- *Staphylococcus aureus* nasal colonisation, particularly MRSA
- Immunosuppression, including diabetes

- Underlying breast abnormality e.g. tumour, cyst, foreign body
- Previous mastitis or breast abscess

3.2. Common symptoms of breast abscess may include :

- Pain
- Fever, malaise

3.3. Common signs include :

- Tender, swollen, fluctuant lump in breast
- Erythema, heat of the overlying skin
 - Note that **inflammatory breast cancer** may also present with warmth, tenderness, oedema and erythema

The following signs can occur with mastitis and breast abscess, but are uncommon, and should prompt the clinician to consider alternative diagnoses, including malignancy:

- Nipple inversion/retraction
- Fistula
- Lymphadenopathy

3.4. Assessment of severity ^{1,3}:

Initial assessment should include a screen for sepsis. If sepsis is suspected, please refer to the trust sepsis guidelines on InSite

Other factors which may indicate a need for hospital admission include:

- Rapidly spreading infection
- Signs of necrotising fasciitis e.g. rapidly spreading erythema, vesicles/bullae, ulcers, crepitations or eschar.
 - Cases of suspected necrotising fasciitis must be discussed urgently with the on call surgeon and microbiology
- Patient is immunocompromised
- Failure to respond to oral treatment

3.5. Investigations:

- Ultrasound is essential in establishing diagnosis. It can differentiate breast abscess from mastitis. This will also determine treatment (antibiotics vs aspiration +/- surgery)
- Ultrasound guided aspirate to obtain samples for microbiology and cytology
 - An aspirate may also be sufficient to treat smaller abscess.
 - Abscess >5cm are less likely to respond to aspirate alone, and will either require incision and drainage or repeated aspirates
- Blood cultures may also be helpful in cases with systemic illness

3.6. Treatment ^(1,3):

All patients presenting with breast abscess should be referred to breast surgeons. Patients who are otherwise stable can be given oral antibiotics (see table 1) and referred to breast clinic to be seen the next working day. This can be arranged by telephoning the breast clinic coordinator. At the time of writing, the number is 0116 256 3735.

Patients who need immediate specialist assessment should be admitted, commenced on antibiotics in table 2, and referred to the relevant surgical team (see below):

In working hours (Mon-Thurs 0800-1700, Fri 0800-1200) emergency breast surgery patients can be referred to breast surgery for assessment on Ward 34 GH. This should be done via the breast surgery junior medical team via 07790825574 or to ext.12490 or the breast consultant on-call via switchboard.

Out of hours (after 1700 Mon-Thurs or from 1200 Friday until 0800 Monday), referrals should be made to the General Surgical middle grade at GH via pager, HPB “hot phone”, Bed Bureau or the on-call breast consultant via switchboard.

Refer to the ‘Breast surgery out-of-hours cover arrangements, emergency admissions & abscess protocol’ on InSite for further information on the cover arrangements for breast surgery patients.

Drainage is the most important treatment for breast abscess. This is usually via ultrasound guided needle aspiration. Repeated drainage may be required.

Incision and drainage is usually reserved for larger abscesses, multiloculated abscesses, or abscesses that fail to respond to repeated needle aspiration.

Antibiotics are usually required in addition to drainage. The antibiotic regime differs for lactational and non-lactational breast abscess, and for patients known to be colonised with MRSA (see tables 1 and 2 below). Antibiotic choice should be reviewed and modified according to culture results.

Beta lactam antibiotics are usually the most effective agents for treating *Staphylococcus aureus*, therefore any reported penicillin allergy must be clearly defined, and intolerance to a specific beta lactam (e.g. nausea with flucloxacillin) should not be interpreted as an allergy to the entire class. Patients with mild penicillin allergy are usually able to tolerate other beta-lactams such as cephalosporins ⁽⁴⁾

Breast feeding women should also be encouraged to continue to breast feed or to express milk if it is not too painful to do so. Further information regarding the safety of antibiotics in pregnancy can be found on the specialist pharmacy service website (<https://www.sps.nhs.uk/home/guidance/safety-in-breastfeeding/>).

Table 1 Empirical oral antibiotic options (review with culture results):

	No allergy	Penicillin allergy (mild)	Penicillin allergy (severe)	MRSA colonised
Lactational breast abscess	Flucloxacillin 1g QDS 10 days	Cefalexin 500mg TDS 10 days	Clarithromycin 500mg BD 10 days	Discuss with microbiology
Non lactational breast abscess	Co-amoxiclav 625 mg TDS 10 days	Doxycycline 200mg OD + Metronidazole 400mg TDS 10 days		Discuss with microbiology

Table 2 Empirical IV antibiotic options (review with culture results):

	No allergy	Penicillin allergy	MRSA colonised
Lactational breast abscess	Flucloxacillin 2g QDS 10 days	Vancomycin 10 days See antimicrobial website for dosing advice	Vancomycin 10 days See antimicrobial website for dosing advice
Non lactational breast abscess	Co-amoxiclav 1.2g TDS 10 days	Vancomycin + Metronidazole either : 500mg TDS IV OR 400mg TDS PO 10 days	Vancomycin + Metronidazole either : 500mg TDS IV OR 400mg TDS PO 10 days

3.7 Ongoing management:

IV to PO switch:

Once the patient is able to switch to oral antibiotics, their prescription should be switched to PO antibiotics to complete 10 days total therapy i.e. if they have already received 5 days of IV therapy, then only 5 days PO antibiotic is required. Please see the 'Trustwide Antibiotic Intravenous to Oral Switch Criteria and Tool' on InSite for more information on switching from IV to oral antibiotics.

The choice of oral antibiotic should be guided by the culture sensitivity results. If the cultures did not grow any organisms, follow the antibiotic guidance in table 1 for empirical oral antibiotic options.

Preventing recurrence:

Lactational and non-lactational abscess:

- Ensure any skin conditions affecting the nipple (e.g. eczema, candidiasis, raynauds) are adequately treated
 - If nipple candidiasis is diagnosed in a breastfeeding woman, both mother and infant should be treated. See NICE CKS on breastfeeding problems for further information (<https://cks.nice.org.uk/topics/breastfeeding-problems/management/breastfeeding-problems-management/>)
- Advise nipple piercings to be removed, due to the risk of bacterial contamination
- Ensure patient knows that recurrence is common (up to 28% of abscesses from periductal mastitis can recur), and that any future episodes of mastitis need prompt treatment
- Advise smoking cessation. Further information can be found on the NHS website: [Quit smoking - NHS \(www.nhs.uk\)](http://www.nhs.uk)

Lactational abscess:

Advise patient to:

- Make sure the infant is attached to the breast correctly.
- Feed on demand, both in terms of frequency and duration.
- Avoid missed feeds, especially when the infant starts to sleep through the night.
- Finish the first breast before offering the other.
- Breastfeed exclusively for 4–6 months, if possible.
- Avoid the use of a dummy, which may result in poor attachment to the breast.
- For future pregnancies, start to breastfeed within an hour of delivery, if possible.

Ensure patient knows how to recognise and treat milk stasis, and not to stop breast feeding abruptly.

Ensure the patient practises strict hygiene:

- Rinse the nipple before and after each feed
- Discard any potentially contaminated nipple creams/ointments
- Ensure any breast pumps are thoroughly cleaned and air dried after every use
- Thorough and frequent hand washing

Further advice on breastfeeding can be found in the 'Breast Feeding Support UHL Obstetric Guideline' on InSite.

Managing recurrence/treatment failure:

After incision and drainage, a rapid improvement should be expected in the patients' clinical condition. If the patient has not improved after 48 hours, consider treatment failure. In which case:

- Ensure there has been adequate source control, and consider repeat imaging/drainage
 - If repeat drainage is required, send sample for mycobacterial and fungal culture in addition to standard MC&S
- Review patient compliance with the antibiotic therapy.
- Review culture results and ensure patient has received the appropriate antibiotic.
- Consider alternative diagnosis e.g. malignancy, galactocoele
- Perform nasal swabs for *Staphylococcus aureus*. If positive, consider decolonisation after acute infection has resolved (see NICE CKS <https://cks.nice.org.uk/topics/boils-carbuncles-staphylococcal-carriage/management/staphylococcal-carriage/>).
 - Note: Clinicians should request routine culture, with “?Staphylococcus aureus carriage” as the clinical information, rather than requesting MRSA screening (which would not detect Methicillin-sensitive *Staphylococcus aureus*)
- If no pathogen is identified, consider an alternative/repeat course of empirical antibiotic:
 - NICE recommend a 10 day course of co-amoxiclav should be given for recurrent breast abscess (both lactational and non-lactational), or in cases of lactational breast abscesses which fail to respond to flucloxacillin
 - Patients with penicillin allergy, or those who have further recurrence, should be discussed with microbiology.

4. Education and Training

None additional

5. Monitoring and Audit Criteria

All guidelines should include key performance indicators or audit criteria for auditing compliance, if this template is being used for associated documents (such as procedures or processes) that support a Policy then this section is not required as all audit and monitoring arrangements will be documented in section 8 of the Policy.

Key Performance Indicator	Method of Assessment	Frequency	Lead
Adherence to guideline in terms of choice and duration of antimicrobial therapy	Annual Trust Wide Antimicrobial Prescribing Audit	Annual	Antimicrobial Pharmacists

6. Supporting Documents and Key References

1. NICE CKS ‘Mastitis and breast abscess’ Jan 2021: <https://cks.nice.org.uk/topics/mastitis-breast-abscess/>
2. Yuan, Qian-Qian, et al. "Management of granulomatous lobular mastitis: an international multidisciplinary consensus (2021 edition)." *Military Medical Research* 9.1 (2022): 1-15.
3. BMJ Best practice. Mastitis and Breast abscess: <https://bestpractice.bmj.com/topics/en-gb/1084>
4. Picard, Matthieu, et al. "Cross-reactivity to cephalosporins and carbapenems in penicillin-allergic patients: two systematic reviews and meta-analyses." *The Journal of Allergy and Clinical Immunology: In Practice* 7.8 (2019): 2722-2738.

8. Key Words

Breast abscess

This line signifies the end of the document

This table is used to track the development and approval and dissemination of the document and any changes made on revised / reviewed versions

DEVELOPMENT AND APPROVAL RECORD FOR THIS DOCUMENT			
Author / Lead Officer:	Dr James Veater		Job Title: Consultant medical microbiologist
Reviewed by:	Mr Jaroslaw Krupa (consultant oncoplastic breast surgeon)		
Approved by:	Antimicrobial Working party Policy and Guideline Committee		Date Approved: 12/07/2022 16 February 2024
REVIEW RECORD			
Date	Issue Number	Reviewed By	Description Of Changes (If Any)
DISTRIBUTION RECORD:			
Date	Name	Dept	Received