



# Mastitis

An Indian Perspective on ABM Protocol #36  
Mastitis Spectrum, Revised 2022

## Issue Highlights

Mastitis Spectrum

Key Points in Pathophysiology

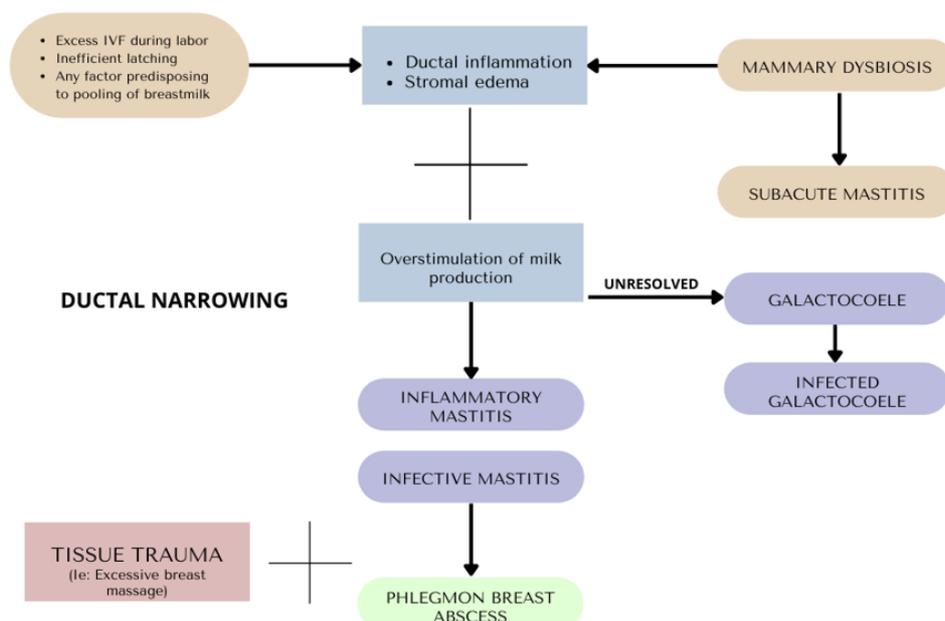
Anticipatory Guidance and Behavioural Interventions

Medical Interventions

## What is mastitis?

- Inflammation of breast tissue
  - Inflammation: a condition in which part of the body becomes red, swollen, hot and often painful
  - Especially as a result to injury or infection
- Tender, hot swollen wedge shaped area of breast
- Associated with temp of 101.3 degrees F (38.5 degrees C) or higher
- Possible chills, flu-like aching and systemic illness<sup>1</sup> (nausea, vomiting, body ache)
- Mastitis can be both infectious or non-infectious

## Mastitis Spectrum in Lactating Breast: Development and Progression of Possible Conditions



### Vocab List

1 Systemic illness: affecting the entire body, rather than a single organ or body part

## Key Points in Pathophysiology

- Ineffective breastfeeding leads to pooling of milk in breasts; this can lead to tissue irritation.
- Ductal lumens<sup>1</sup> can be narrowed by edema and hyperemia<sup>2</sup> associated with hyperlactation as well as mammary dysbiosis.
- Mammary dysbiosis,<sup>3</sup> or disruption of the milk microbiome,<sup>4</sup> results from (a complex interplay of factors).
  - Maternal genetics
  - Medical conditions
- Conditions that causes change in maternal microbiome (organisms living in the maternal body) e.g. exposure to antibiotics, use of probiotics, regular use of breast pumps, and caesarean births etc.

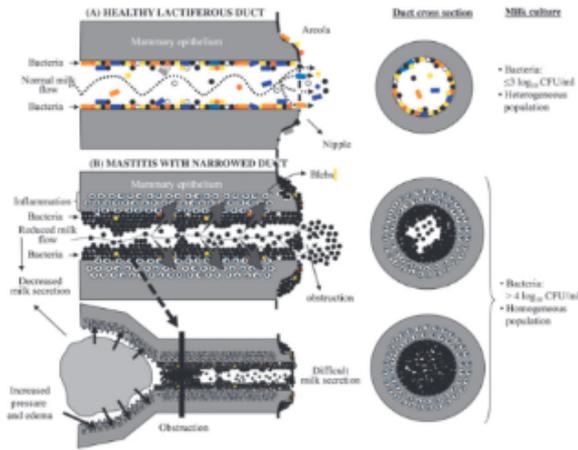


Image Credit: @ABM Protocol Mastitis

- Previously it was thought milk blocks the ducts, but now it is known to be microscopic ductal inflammation and narrowing. This can happen due to alveolar distension<sup>5</sup> and/or mammary dysbiosis.
- Ducts in the breast are innumerable and interlacing. It is not physiologically or anatomically possible for a single duct to become obstructed with a milk “plug.”
- You will find a focal area of induration<sup>6</sup> or more globally congested breast tissue that is tender (painful to touch).
- It may appear red from lymphatic congestion and alveolar edema,<sup>7</sup> and is not associated with systemic symptoms like fever, chills, malaise, body aches, nausea etc.
- With feeding, transient relief can be felt as feeding decreases alveolar distension. However, repeated attempts to drain the breast to relieve the “plug” will suppress FIL, increase milk production and ultimately exacerbate inflammation and ductal narrowing.
- **Therefore, physiological breastfeeding and anti-inflammatory measures are most efficacious.**
- Attempts to extrude a “plug” or milk block by squeezing or aggressively massaging the breast are ineffective and result in tissue trauma and worsen the situation.

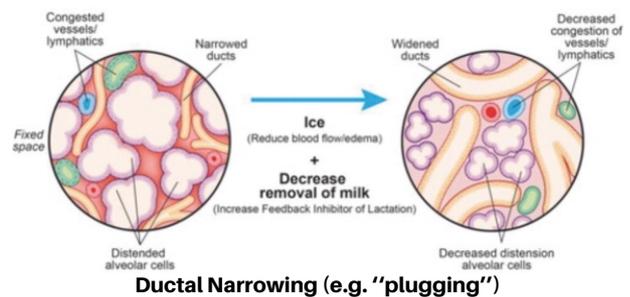


Image Credit: @ABM Protocol Mastitis

## What is inflammatory mastitis?

- When ductal narrowing persists or worsens and surrounding inflammation progresses, inflammatory mastitis develops.
- Inflammatory mastitis presents as an increasingly red, swollen, and painful region of the breast with systemic signs and symptoms such as fever, chills, and tachycardia.<sup>8</sup>
- **It's important to know that these signs can be present even in the absence of infection.**

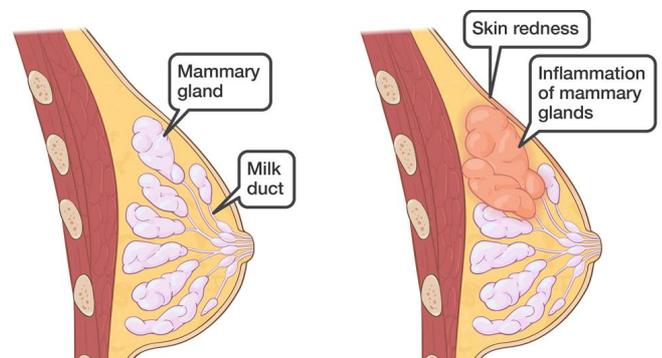


Image Credit: @AboutKidsHealth.ca

## Vocab List

**1 Ductal lumens:** cavity or channel within a tube or tubular organ || **2 Hyperemia:** excess of blood in the vessels supplying an organ or other part of the body || **3 Mammary dysbiosis:** a process whereby the population of potential pathogens increases at the expense of the normal mammary microbiota. || **4 Microbiome:** the microorganisms that live in or on a particular part of the body, || **5 Alveolar distension:** an important mechanism of persistent lung damage || **6 Induration:** an increase in the fibrous elements in tissue commonly associated with inflammation and marked by loss of elasticity and pliability || **7 Alveolar edema:** condition in which the lungs fill with fluid || **8 Tachycardia:** heart rate over 100 beats a minute

Adapted from ABM Protocol #36: Mastitis Spectrum, Revised 2022

## What is infectious mastitis?

- Bacterial mastitis presents as worsening of redness and induration in a specific region of the breast that may spread to different quadrants, necessitating antibiotics or probiotics to resolve.
- Common organisms in lactation related mastitis include: Staphylococcus (e.g., S. aureus, S. Epidermidis, S. lugdunensis, and S. hominis) and Streptococcus (e.g., S. mitis, S. salivarius, S. pyogenes, and S. agalactiae).
- **No scientific evidence exists to support Candida (yeast) mastitis and sterilisation of pump parts or infant toys is not recommended to “eradicate”<sup>1</sup> yeast.**
- **Bacterial mastitis is not contagious and does not pose a risk to the infant nor require an interruption in breastfeeding.**
- There is no evidence to support poor hygiene as a cause of bacterial mastitis or the need for routine sterilization of pumps.
- Handwashing before milk expression and basic pump cleaning practices should be followed.
- Although nipple trauma is associated with mastitis, the data are limited by confounding<sup>2</sup> and bias.
- **NEW Evidence:** The composition of the human milk microbiome demonstrates that mastitis is not caused by backward spread of pathogenic bacteria from visible nipple trauma. Bacteria and fungi identified on the nipple-areolar-complex in the presence of nipple pain and damage are regularly identified in healthy human milk microbiomes.
- **Infection may not occur in the event of:**
  - A low concentration of the pathogen<sup>3</sup>
  - Presence of nonvirulent or weakly virulent<sup>4</sup> strain
  - Presence of a competitive microbiota<sup>5</sup>
  - Adequate immunological and nutritional status of the host.
- **Therefore, two clients who host the same pathogen may express different levels of symptomatology.**
- **An evaluation by a medical professional should be performed if there are persistent systemic symptoms (>24 hours) such as:**
  - Fever and tachycardia.
  - In the absence of systemic signs and symptoms, diagnosis should be considered if the breast is not responding to conservative measures.

## What is an abscess?

- A progression from bacterial mastitis or **phlegmon**<sup>6</sup> to an infected fluid collection that necessitates drainage.
- Approximately 3–11% of women with acute mastitis will develop an abscess.
- Abscess presents as a progressive induration and redness, and often a palpable fluid collection in a well-defined area of the breast.
- The initial systemic symptoms and fever may resolve as the body walls off the infectious process, or may resolve and then recur.
- Alternatively, symptoms may continue to worsen until the infected fluid collection is drained.
- **Although the diagnosis of abscess is often made by history and clinical examination, ultrasound may also be helpful.**

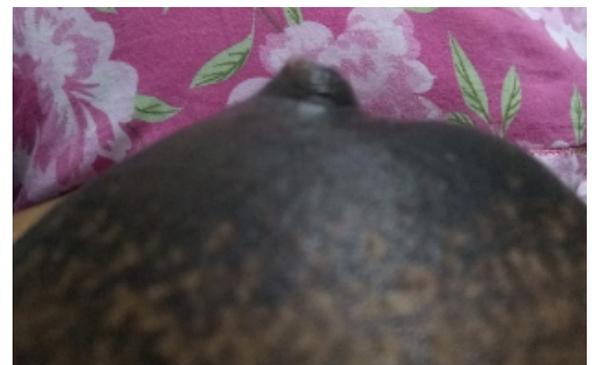


Image Credit: @Dana Hardy, Dehradun 2020

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### Vocab List

1 **Eradicate:** destroy completely || 2 **Confounding:** Confusing/ Mixed up || 3 **Pathogen:** microorganism that can cause a disease || 1.4 **Virulent:** extremely severe or harmful in its effects. || 5 **Microbiota:** the microorganisms of a particular site, habitat, or geological period || 6 **Phlegmon:** ill defined, heterogeneous fluid collection often due to excessive deep tissue massage)

## What is a galactocele?

- A galactocele develops when ductal narrowing obstructs the flow of milk to the extent that a significant volume of obstructed milk collects in a cyst-like cavity.
- Galactoceles can range in size from small (1–2 cm) to very large (>10 cm).
- Galactoceles present as a moderately firm mass that gradually or rapidly increases in size over time.
- The size may fluctuate throughout the day, with a temporary decrease after breastfeeding. It may be uncomfortable, but is generally not as overtly painful as an abscess and does not have associated erythema or systemic symptoms unless it becomes infected.
- Ultrasound will show a simple or loculated cystic fluid collection.

## What is recurrent mastitis?

- There is no consensus on the definition of recurrent mastitis.
- Lactating parent may describe having mastitis symptoms such as:
  - Fever, breast redness, breast swelling, and/or breast pain that occur every 2–4 weeks or less often.
- Risk factors for recurrent mastitis are:
  - waxing and waning episodes of hyperlactation,
  - dysbiosis,
  - inadequate treatment of prior mastitis,
  - failure to address the underlying aetiology<sup>1</sup> of prior episodes.

## What is subacute mastitis?

- Subacute mastitis occurs when ductal lumens become narrowed by bacterial biofilms<sup>2</sup> in the setting of chronic mammary dysbiosis.
- Under physiological conditions, coagulase-negative Staphylococci (CoNS) and viridans Streptococci (i.e., *S. mitis* and *S. salivarius*) form thin biofilms that line the epithelium<sup>3</sup> of the mammary ducts, allowing a normal milk flow.
- In the setting of dysbiosis, these species proliferate and are able to form thick biofilms inside the ducts, inflaming the mammary epithelium and forcing milk to pass through an increasingly narrower lumen).
- CoNS and viridans Streptococci do not produce toxins responsible for acute bacterial mastitis.
- **Therefore, systemic symptoms are uncommon and local breast symptoms are milder than in acute mastitis.**

### There can also be a history of:

- Previously treated acute bacterial mastitis
- Caesarean birth
- Exclusive pumping
- Nipple shield use
- Other circumstances that alter the milk microbiome
- Lactating parents may have:
  - Needle-like, burning breast pain, nipple blebs, recurrent areas of induration or congestion, and may have unresolved hyperlactation.
- Sterile milk culture and sensitivities can be performed

### Treatment

- General strategies that apply to the entire spectrum
- Condition-specific interventions
- **Prompt and effective treatment will halt progression in the spectrum**

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### Vocab List

<sup>1</sup> **Aetiology:** Set of causes || <sup>2</sup> **Bacterial biofilms:** complex surface attached communities of bacteria held together by self-produced polymer matrixes mainly composed of polysaccharides, secreted proteins, and extracellular DNAs. ||

<sup>3</sup> **Epithelium:** the thin tissue forming the outer layer of a body's surface and lining the alimentary canal and other hollow structures

## Supporting Step By Step: Anticipatory Guidance and Behavioural Interventions

1. Skilled lactation care should be conservative and support the lactating parent by explaining the signs of effective milk transfer and successful lactation.
2. LPs should provide education about normal postpartum breast physiology.
3. In case of overfull breasts or engorgement, the parent should feed the infant on demand not aim to “empty” breasts.

### • Special Note

- Overfeeding from the affected breast or “pumping to empty” perpetuates a cycle of **hyperlactation**.<sup>1</sup>
- This is a major risk factor for worsening tissue edema and inflammation.
- Parent can hand express small volumes of milk for comfort, until their milk production downregulates to match the infant's needs.
- Parent using breast pumps should express only the volume their infant consumes.



Image Credit: @Camilla Conti

### • Acute Phase

- In some instances, the retroareolar<sup>2</sup> region is so edematous and inflamed that no milk is expressible by infant breastfeeding or hand expression.
- In this case, the parent should not attempt feeding from the affected breast during this acute phase.
- Parent can feed from the contralateral<sup>3</sup> breast and return to feeding from the affected breast when edema and inflammation subsides.
- Edema may resolve more quickly with ice and lymphatic drainage. They should be counselled that a decrease in milk production is expected, but can later be augmented.<sup>4</sup>

### 4. Minimise breast pump usage. Limit hand expression.

- Mechanical breast pumps stimulate breast milk production without physiologically extracting milk like infants do.
- Pumping does not provide the opportunity for bacterial exchange between the infant's mouth and parent's breast. This may predispose to dysbiosis (disruption of the breast's microflora).
- Breast pumps also can cause trauma to breast parenchyma<sup>5</sup> and the nipple areolar complex if improper flange sizes are used, suction is too high, or the parent is pumping for an excessive duration of time.
- Milk expression should be limited to when parent is separated from their infant or requires pumping for other medically indicated reasons for themselves or their infant.
- Parents using breast pumps should express milk at a frequency and volume that mimics physiological breastfeeding.

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### Vocab List

1 **Hyperlactation**: breast milk oversupply || 2 **Retroareolar**: region within two cm from the nipple || 3 **Contralateral**: relating to or denoting the side of the body opposite to that on which a particular structure or condition occurs. || 4 **Augmented**: having been made greater in size or value. || 5 **Breast parenchyma**: a reflection of the proportion of glandular tissue to fatty tissue

# Step By Step: Anticipatory Guidance and Behavioural Interventions

## 5. Avoid the use of nipple shields.

- Evidenced-based practice does not support the use of nipple shields. Neither safety nor effectiveness has been demonstrated.
- Nipple shields represent non-physiological breastfeeding.
- Infants often passively drink milk from the shield repository, without latching to the parenchyma of the breast resulting in inadequate drainage of breast.

## 6. Wear an appropriately fitting supportive bra.

## 7. Avoid deep massage of the lactating breast.

- Breast massage may reduce pain temporarily, but, if not done correctly it has the potential to cause more tissue inflammation. It should not be routinely recommended.

## 8. Avoid saline soaks, castor oil, and other topical products.

## 9. Avoid routine sterilisation of pumps and household items.

## Referral Based Support Team

Lactation professionals provide skilled lactation care and support to families through the perinatal time period. LPs work in various community settings with a referral based support team\*\* and do not provide medical services, treatment, prescription or diagnosis unless their primary degree permits this (ie: doctors, pediatricians, OB/ Gynacs, etc).

\*\*Referral based support teams may include doctors, nurses, physiotherapists, dentists, psychologists, speech and language pathologists, occupational therapists, and others professions.

## Summary of Possible Interventions\* \*

\*\*As mentioned above, if there is needed medical diagnosis, treatment or prescriptions, Lactation Professionals will refer to the appropriate medical provider.

- 1. Decrease pain and inflammation:**
  - NSAIDS and cool fomentation<sup>1</sup>
- 2. NOTE: Sunflower or soy lecithin 5–10 g daily** by mouth may be taken to reduce inflammation in ducts and emulsify milk. Refer for the prescription and treatment.<sup>2</sup>
- 3. The use of warm showers and anti-fever medications did not improve mastitis outcomes in a randomized controlled trial.**
- 4. Refer for treatment of associated nipple blebs and avoid unroofing<sup>3</sup> to appropriate medical provider.**
  - Oral lecithin and application of a topical moderate potency steroid cream such as 0.1% triamcinolone may be used to reduce inflammation on the surface of the nipple.
  - This is safe with breastfeeding and can be wiped off with a tissue or towel before feeding the infant.
- 4. Assess for hyperlactation, or breast milk "oversupply".**
  - Hyperlactation predisposes patients to luminal congestion and inflammation, which in turn facilitates mammary dysbiosis. This may potentiate a vicious cycle, as dysbiosis is a cause of ductal narrowing and inflammation. (See *ABM Protocol 32, Management of Hyperlactation.*)
- 5. Refer for the utilisation of therapeutic ultrasound to appropriate medical provider.**
- 6. Refer for antibiotic treatment for bacterial mastitis.**
- 7. Recommend the use of probiotics.**
- 8. Assess for PMAD and refer. (Perinatal or postpartum mood and anxiety disorder)**

### Vocab List

1 **Fomentation:** Fomentation is much like a compress. Most compresses are applied and left to cool || 2 **Emulsify:** mix or combine ||

3 **Unroofing:** strip off the roof or covering of

### Content Customized by ALPI Action Committee II - Practice and Protection

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