EDUCATION & ADVICE - ALL CONDITIONS

1. MASTITIS SPECTRUM RECOMENDATIONS: "ANTICIPATORY GUIDANCE AND BEHAVIOURAL INTERVENTIONS" (ABM)

a. Reassure mothers many symptoms will resolve with conservative care & psychosocial support

- A Swedish study noted that most women with inflammatory mastitis had complete resolution of symptoms without need for antibiotics or other interventions.
- The authors attributed this finding to a focus on symptomatic control, appreciation of the physiological anti-inflammatory response, and regular communication between patient and clinician
- Support patients in continuation of breastfeeding and ascertain what resources they may need to prevent early weaning.
- Assist mothers in identifying ways to decrease stress, increase opportunities to rest, and help resolve early signs of inflammatory mastitis.
- Fourth- trimester care programs represent a holistic approach to postpartum care, including mental health, psychosocial needs, and breastfeeding counselling

b. Educate pts on normal breast anatomy & postpartum physiology in lactation

- Many patients experience breast fullness or palpate normal lactational glandular tissue and misinterpret this as "plugging."
- They should be reassured that lactating breasts can feel "lumpy" and even painful at times.
- Although this is uncomfortable, it is not abnormal.
- Patients should be educated about early postpartum hormonal shifts and a low estrogen state that predisposes patients to sweating and hot flashes that may mimic fevers.
- In addition, patients should be reassured that infection does not develop in the period of several hours.
- The pain and redness they may experience in mornings after a long stretch of sleep represents alveolar distention, edema, and inflammation rather than infection.

c. Feed infant on demand and do not aim to “empty’ breasts

- Milk volume depends on a feedback mechanism whereby increased milk removal increases production.
- Overfeeding from the affected breast or “pumping to empty” perpetuates a cycle of hyperlactation and is a major risk factor for worsening tissue oedema and inflammation .
- Mothers can hand express small volumes of milk for comfort until their milk production down regulates to match the infant’s needs.
- Mothers using breast pumps should express only the volume their infant consumes.
- In some instances, in which the retro-areolar region is so oedematous and inflamed that no milk is expressible by infant breastfeeding or hand expression, the mother should not continue to attempt feeding from the affected breast during the acute phase.
- She can feed from the contralateral breast and return to feeding from the affected breast when oedema and inflammation subsides.
- Oedema may resolve more quickly with ice and lymphatic drainage.
- She should be counselled that a decrease in milk production is expected, but can later be augmented.
- No evidence exists to support “dangle feeding” (i.e., feeding an infant on the floor with the mother hovering above) or other unsafe infant positions.
- Patients may consider safe variations on standard feeding positions, with the understanding that this may improve comfort.
- However, this does not address underlying inflammation.

d. Minimise breast pump usage

- Mechanical breast pumps stimulate breast milk production without physiologically extracting milk as an infant will.
- Pumping does not provide the opportunity for bacterial exchange between the infant’s mouth and mother’s breast, and may, therefore, predispose to dysbiosis.
- Breast pumps also can cause trauma to breast parenchyma and the nipple areolar complex if improper flange sizes are used, suction is too high, or the mother is pumping for an excessive duration of time.
- Milk expression should be limited to when mother is separated from her infant or requires pumping for other medically indicated reasons for herself or her infant.
- Women should not be instructed to express and discard their milk, as bacterial mastitis is not a contraindication to breastfeeding.
- Women using a breast pump should express milk at a frequency and volume that mimics physiological breastfeeding.

e. Avoid use of nipple shields

- Available evidence does not support the use of nipple shields.
- Neither safety nor effectiveness has been demonstrated.
- Similar to pumping, nipple shields represent non-physiological breastfeeding and result in inadequate breast milk extraction.
- Infants often passively drink milk from the shield repository without latching to the parenchyma of the breast.

f. Wear an appropriately fitting supportive bra

- Lactating breasts are highly vascular and require support to avoid dependent lymphedema as well as progressive back and neck pain.

g. Avoid deep massage of the lactating breast

- Deep massage causes increased inflammation, tissue oedema, and microvascular injury.
- Avoid electric toothbrushes and other commercial vibrating or massaging devices.
- A systematic review concluded that although breast massage may reduce pain, it should not be recommended as standard of care because it requires extensive training to master atraumatic approach.
- The most successful technique approximates manual lymphatic drainage with light sweeping of the skin rather than deep tissue massage.
- It should be noted that gentle compressions during breast pump usage, often termed “hands on pumping,” provide an effect similar to hand expression and is safe, if excessive manual force is avoided.

h. Avoid saline soaks, castor oil and other topical products

- Mastitis is inflammation and/or infection in a deep organ space, and should be managed as such.
- Topical products such as castor oil will not treat this condition and may in fact cause tissue damage, particularly if they are combined with massage.
- Silicone breast pumps filled with Epsom salt can macerate skin and further contribute to localised hyperemia and oedema, and should be avoided.
- Published evidence and best practice for general wound care do not support the use of saline soaking for pain or nipple trauma.
- Principles of wound management include handling tissue delicately to minimise further trauma and consideration of ointments and dermal matrices to enhance wound closure.

i. Avoid routine sterilisation of pumps and household items

- Mastitis is not contagious and does not result from unhygienic practices.
- Pump parts should be cleaned appropriately after each use, but routine sterilisation of pumps and other household items is not necessary to prevent mastitis.
- Avoid cleaning of nipple as this may cause skin maceration and pain.
- Ascending infection is not supported by the highly vascular nature of nipple physiology and anatomy.
- Similar to other open sites of trauma in the body (e.g., tracheostomies and gastric tube entrance sites), external communication prevents deep tissue infection rather than promotes it.

INTERVENTIONS - ALL CONDITIONS

2. TREATMENT - ALL CONDITIONS - ABM: "MEDICAL INTERVENTIONS"

a. Decrease inflammation & pain

- Ice and non-steroidal anti-inflammatory drugs (NSAIDs) can reduce oedema and inflammation and provide symptomatic relief.
- Paracetamol can provide analgesia.
- For example, ice can be applied every hour or more frequently if desired. Ibuprofen can be dosed 800mg every 8 hours and paracetamol 1,000mg every 8 hoursin the acute setting.
- Although heat will vasodilate and may worsen symptoms, it also may provide comfort for some patients. The use of warm showers and antipyretics did not improve mastitis outcomes in a randomized controlled trial.
- Sunflower or soy lecithin 5–10g daily by mouth may be taken to reduce inflammation in ducts and emulsify milk.

b. Treat associated nipple blebs & avoid unroofing

- If a nipple bleb, which represents ductal inflammatory cells propagating to the surface and lodging is present, do not unroof the bleb as this will cause trauma and further luminal narrowing.
- Oral lecithin and application of a topical moderate potency steroid cream such as 0.1% tri- amcinolone 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.

c. Treat 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.

d. Utilise therapeutic ultrasound

- Therapeutic ultrasound, or TUS, uses thermal energy to reduce inflammation and relieve oedema.
- TUS may be an effective treatment for conditions arising in the mastitis spectrum.
- TUS can be performed under the supervision of a trained physician or physiotherapist on a daily basis until relief is achieved.
- The breast treatment setting is 1 MHz, intensity 2.0 W/cm2 for 5 minutes.
- If a patient has persistent symptoms despite several days of treatment, health care providers should consider additional investigations.

e. Reserve antibiotics for bacterial mastitis

- Use of antibiotics for inflammatory mastitis disrupts the breast microbiome and increases the risk of progression to bacterial mastitis.
- Furthermore, nonselective use of antibiotics promotes development of resistant pathogens. Prophylactic antibiotics have not been shown to be effective in the prevention of mastitis.
- It should be noted that many antibiotics and anti-fungal medications have anti-inflammatory properties, and this may explain why women experience relief when taking these.

f. Consider probiotics

- Data regarding probiotics are mixed.
- A systematic review suggested that probiotics may be effective for both treatment and prevention of mastitis, but a strong recommendation could not be made due to limitations of the studied trials.
- If utilised, the probiotic should contain Limosilacto-bacillus fermentum (formerly classified as Lactobacillus fermentum) or, preferably, Ligilactobacillus salivarius (formerly classified as Lactobacillus salivarius) strains.
- Note that only selected strains of these bacterial species may be effective against mastitis pathogens. Therefore, clinical trial outcomes cannot be generalised to an entire species in the same way that antibiotics may be efficacious against one strain of a pathological bacteria but not another.

g. Evaluate for peri-natal mood and anxiety disorders

- Women with a history of anxiety and depression experience higher rates of mastitis symptoms, and PMADs are increased in any patient experiencing breastfeeding complications.
- Although any clinicians contacting postpartum patients should screen for PMADs, particular attention should be paid to patients feeling defeated and/or withdrawn as a result of challenges with breastfeeding.
- Furthermore, patients who express significant worry about potential recurrence and are unable to stop pumping despite recommendations may be suffering from anxiety.
- Extreme pain out of proportion to exam may also point to alterations in sensitivity to stimulation as a result of PMADs and, therefore, should be considered in the differential diagnosis.
- Careful exploration of Dysphoric Milk Ejection Reflex and/or nursing aversion may also be warranted if the patient does not report traditional symptoms of PMADs

ABM general recommendations should not replace the specific advice provided by a healthcare practitioner. In certain situations, a healthcare provider may make an alternate recommendation, based on the specific presentation of the breastfeeding patient.

CONDITION-SPECIFIC RECOMMENDATIONS

ENGORGEMENT

1. Specific recommendations:

- Minimise intravenous fluids during labor, as interstitial fluid accumulation exacerbates oedema and engorgement.
- Promote “rooming in” to allow physiological breastfeeding and avoidance of pumping.
- Instruct mothers on hand expression to relieve symptoms and provide breast milk for infants who may not transfer milk effectively or are separated from their mothers.
- Perform reverse pressure softening of the areola, and manual pump or hand expression to remove small volumes of milk before infant latch and facilitate physiological milk transfer.
- Consider lymphatic drainage to alleviate interstitial oedema
- Consider ice for symptomatic relief. Studies have not demonstrated cabbage leaves to be more effective than ice, suggesting that the therapeutic benefit is related to vasoconstriction from cold rather than a property of cabbage itself. Importantly, cabbage may carry Listeria bacteria.

DUCTAL NARROWING

1. Anticipatory Guidance & Behavioural Interventions (see previous)
2. Medical Interventions (see previous)

INFLAMMATORY MASTITIS

1. Anticipatory Guidance & Behavioural Interventions (see previous)
2. Medical Interventions (see previous)

BACTERIAL MASTITIS

1. Anticipatory Guidance & Behavioural Interventions (see previous)
2. Medical Interventions (see previous)
3. Specific recommendations:

- Antibiotic selection, dosage, and duration for bacterial mastitis
- It is safe for children to consume milk from a breast with bacterial mastitis.
- Routine hospital admission and IV antibiotics are not necessary unless known multi-drug-resistant organism (MDRO) or clinical presentation mandates (e.g., evidence of severe sepsis and inability to tolerate oral medication or fluid). Of note, some MDRO may be treatable using oral antibiotics. Antibiotic choice should be driven by culture data or local antibiogram.
- If hospital admission is required, mother & infant should be kept rooming together & allowed to continue breastfeeding on demand
- ABM Protocol #35, Supporting Breastfeeding During Maternal or Child Hospitalisation, refers to other recommendations in detail.
- Consider intravenous fluid administration if patient's oral intake of fluids is suboptimal as this may alleviate tachycardia and improve symptomatology.
- If there is no symptomatic improvement after 48 hours of first-line therapy, consider a milk culture to evaluate for resistant and/or less common pathogens such as methicillin-resistant Staphylococcus aureus (MRSA). Consider local susceptibility and resistance patterns and proceed to empiric therapy. Other situations in which to consider early milk culture include mothers expressing breast milk for an immunocompromised infant in the neonatal intensive care unit, health care workers in areas with a high prevalence of MRSA, and patients with recurrent infections. Data regarding the role of probiotics in bacterial mastitis continue to emerge. Probiotics have been shown not to alter composition of human milk microbiome.

PHLEGMON

1. Anticipatory Guidance & Behavioural Interventions (see previous)
2. Medical Interventions (see previous)
3. Specific recommendations:

- Lactational phlegmon may require extended antibiotics for complete resolution, but cases should be considered individually.
- A phlegmon may coalesce into a drainable abscess and, therefore, patients should be followed carefully for this development. Interval examination and imaging is warranted until complete resolution.

ABSCESS

1. Anticipatory Guidance & Behavioural Interventions (see previous)
2. Medical Interventions (see previous)
3. Specific recommendations:

- Drain the abscess to achieve source control. Needle aspiration with fluid culture and sensitivity is often recommended as the first-line intervention for lactational abscess.
- However, patients most often require recurrent aspirations for definitive resolution.
- Repeated aspirations may be stressful and discouraging for the patient, and risk breastfeeding discontinuation.
- Drain placement as the initial intervention should be considered for definitive management at the time of the index procedure.
- Drains or skin stents should be placed to gravity rather than suction
- Strictly avoid vacuum-assisted wound devices on a lactating breast.
- After aspiration or drain placement, mothers should continue breastfeeding from the affected breast. Milk fistula rate is <2%, but lactation must be managed appropriately and hyperlactation treated if present.
- Antibiotic duration is commonly 10–14 days; however, a shorter course may be appropriate if there is rapid resolution of surrounding cellulitis.
- Tissue inflammation and phlegmonous changes may take several weeks to resolve and patients may feel the presence of a small mass-like area. They should undergo interval examination and imaging to ensure resolution.

GALACTOCELE & INFECTED GALACTOCELE

1. Anticipatory Guidance & Behavioural Interventions (see previous)
2. Medical Interventions (see previous)
3. Specific recommendations:

- For symptomatic galactoceles, drainage is recommended for symptom relief, confirmation of diagnosis, and to decrease mass effect to facilitate latch.
- Aspiration almost always results in incomplete drainage and/or recurrence
- Repeated aspirations risk converting a sterile galactocele into an infected galactocele.
- Therefore, drain placement as described earlier is recommended.
- An infected galactocele requires drainage as well as antibiotics

SUB-ACUTE MASTITIS

1. Anticipatory Guidance & Behavioural Interventions (see previous)
2. Medical Interventions (see previous)
3. Specific recommendations:

- Individual mammary microbiomes have different environmental thresholds at which opportunistic bacterial pathogens become symptomatic. Further, milk culture may not grow a dominant organism. Therefore, treatment should be individualized based on clinical history and level of suspicion for subacute mastitis.
- Antibiotics in the macrolide class may have the best efficacy in this clinical scenario due to the intracellular mechanism of action, though more studies are needed.
- Probiotics containing L. salivarius or L. fermentum strains represent a treatment option, although more studies are required.

RECURRENT MASTITIS

1. Anticipatory Guidance & Behavioural Interventions (see previous)
2. Medical Interventions (see previous)
3. Specific recommendations:

- Examine patients and obtain milk culture to establish a diagnosis of true recurrent mastitis, rather than treating empirically. Breast milk culture can identify and provide sensitivities of uncommon pathogens and resistant bacteria. For example, although CoNS are commonly present in breast milk, they have also been identified as opportunistic pathogens in mastitis. MRSA and resistant CoNS will not respond to typical antibiotics used for acute mastitis such as dicloxacillin or cephalexin.
- Ensure resolution of bacterial mastitis, as earlier, with follow-up examination of patients.
- Evaluate breastfeeding and/or pumping for potential risk factors for mastitis (e.g., excessive massage and unnecessary pumping).
- Consider daily probiotic use with L. fermentum or, preferably, L. salivarius for prevention, recognising the limitations of different strains of the same species having different efficacies.
- Prophylactic antibiotics have not been shown to be effective in the prevention of mastitis and may select antibiotic-resistant strains.
- Multiple recurrences in the same location warrants radiology evaluation to rule out an underlying mass or other abnormality such as granulomatous mastitis.
- Inflammatory breast cancer is an aggressive subtype of malignant tumors that presents with progressive erythema, breast retraction, and peau d’orange appearance of the breast. Any concern for inflammatory breast cancer warrants urgent referral to breast surgery and oncology.

ANTIBIOTICS

First line

- Dicloxacillin or flucloxacillin 500 mg QID for 10–14 days
- Where dicloxacillin and flucloxacillin are not available, cloxacillin can be used alternatively; however, oral bioavailability is more variable with cloxacillin. All drugs have low Relative Infant Dose of the drug. Cephalexin 500 mg QID for 10–14 days
- Broader coverage including gram negative rods; does not need to be taken separately from meals

Second line

- Clindamycin 300 mg four times daily for 10–14 days
- Trimethoprim-sulfamethoxazole DS BID for 10–14 days - Not recommended for mothers of children with G6PD deficiency. Use with caution in mothers with premature infants or infants with hyperbilirubinemia, especially under 30 days old.

NB: local trends in AB use and resistance may influence prescription eg in Australia, commonly Flucloxacillin, then Cefalexin is used.

ABM ACADEMY OF Breastfeeding Medicine

Academy of Breastfeeding Medicine Clinical Protocol #36:
The Mastitis Spectrum
(Revised 2022)

BREASTFEEDING MEDICINE Volume 17, Number 5, 2022
DOI: 10.1089/bfm.2022.29207.kbm

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