Breastfeeding Update for Primary Care Providers
Alison Stuebe, MD, MSc, FACOG, FABM
astuebe@med.unc.edu
Twitter: @astuebe

Breastfeeding is a public health issue

Exclusive breastfeeding is recommended up to 6 months of age, with continued breastfeeding along with appropriate complementary foods up to two years of age or beyond.

… exclusive breastfeeding for the first 6 months of life, with continued breastfeeding as complementary foods are introduced through the infant’s first year of life, or longer as mutually desired by the woman and her infant.
Breastfeeding Rates

- United States: 87.1%
- Colorado: 88.6%

Breastfeeding Success

- 18% ≥ 12 months
- 45% Early, undesired

Mother's breastfeeding goals

- Anticipatory guidance
- BabyFriendly maternity care
- Evidence-based breastfeeding management
- Paid leave and supportive childcare

Tonight's agenda

- It's so much more than the latch: Skills for talking about breastfeeding
- Why does it hurt?: A differential diagnosis for breastfeeding-associated pain
- Is this medication safe for breastfeeding?

Mother's breastfeeding goals
It’s so much more than the latch: Skills for talking about breastfeeding

- Demonstrate skills to effectively communicate with other health professionals to improve outcomes for breastfeeding mothers and babies.
- Demonstrate skills to communicate effectively to improve outcomes for mothers and babies.
- Describe the core components of the crucial conversations.
- Identify 3 strategies for establishing mutual purpose and mutual respect.

Communicator Instructions

Using your pen or pencil, tap out the lyrics to Happy Birthday.

What is a Crucial Conversation?

- A discussion between two or more people where...
  - The stakes are high
  - Opinions vary
  - Emotions run strong
Work on me first: Get unstuck

- Unbundle with C-P-R
  - Content: a single instance of a problem. If either the action itself or its immediate consequences is the issue, you’ve got a content problem
  - Pattern: A recurring problem – a pattern of behavior over time
  - Relationship: how the problem is affecting your relationship – eg trust is suffering, or competence is in question
- What issues do you need to address, with whom, to get unstuck?

Work on me first: Start with Heart

- What do I really want for myself?
- What do I really want for others?
- What do I really want for the relationship?
- What could you say to make what you really want clear?

Work on me first: Master My Stories

- https://www.youtube.com/watch?v=PuJgqTs-G44

“Any set of facts can be used to tell an infinite number of stories.”
Three clever stories

Victim

Villain

Helpless

Tell the rest of the story

What am I pretending not to notice about my role in the problem?

Why would a reasonable, rational, and decent person do this?

What should I do right now to move toward what I really want?

My Meaning: STATE my path

Share the facts

Tell what you conclude

Ask for other’s paths

Talk tentatively

Encourage testing

“I noticed that…”

“I start to think that…”

“Can you help me better understand?”

Allow room for others to share and avoid absolutes

Get more meaning into the pool of shared meaning

Make it Safe

Clear Problem

Misunderstanding

Mutual Respect

Apologize

Contrast

Mutual Purpose

Create mutual purpose

Contrast

Make it safe

Apology

• A statement that sincerely expresses your sorrow for your role in causing – or at least not preventing – pain or difficulty to others

Contrast

• A don’t /do statement that provides context and proportion

Make it safe: Contrasting

“I don’t” want you to think I haven’t noticed the time and energy you’ve invested in promoting our new women’s pavilion.

“I do” want to make sure that the messages we’re conveying support our moms who want to exclusively breastfeed.”
### Make it safe

**Mighty ‘might’**

The elusive ‘and’

### Their Meaning: Learn to Look

**Silence**
- Masking
  - Sarcasm, sugar-coating
- Avoiding
  - Steering away from sensitive subjects
- Withdrawing
  - Pulling out of the conversation

**Violence**
- Controlling
  - Cutting others off, overstating the facts, speaking in absolutes
- Labeling
  - Stereotyping
- Attacking
  - Belittling or threatening

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### Move to Action

**Decide how to decide**
- Command
- Consult
- Vote
- Consensus

**Finish Clearly**
- Who
- Does what
- By when
Why does it hurt?

Understand the diverse etiology of breastfeeding associated pain

Be able to complete a detailed history and physical exam for a mother-baby dyad with breastfeeding associated pain

Understand how to counsel a mother regarding likely diagnosis and treatment of pain

Take-home points

Most pain begins with traumatic injury to the nipple – a problem at the "oroboobular interface"

For mothers who are pumping, pain may result from pump overuse or misuse

Fixing pain requires fixing this problem – generally with the expertise of a lactation consultant

Trauma can cause a secondary problem:
- Mastitis
- Dermatitis
- Infection
- Vasospasm
- Functional pain

Cultures can be helpful to diagnose the secondary problem, but:
- Not all problems with nipples are yeast
- Not all oral thrush in infants is a problem
- Not all bacteria in milk or on nipples is a problem

The prevalence of postpartum depression and anxiety symptoms among mothers with breastfeeding-associated pain is high

Among women with a predisposition to chronic pain and/or anxiety, symptoms may persist after the trauma and/or the secondary problem resolve
How common is breastfeeding-associated pain?

<table>
<thead>
<tr>
<th>Day 1</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<tbody>
<tr>
<td></td>
<td>72.5%</td>
<td>10.9%</td>
<td>11.5%</td>
<td>8.4%</td>
<td>9.5%</td>
<td>6.3%</td>
<td>6.5%</td>
<td>4.5%</td>
<td>2.4%</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 1</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>95.1%</td>
<td>9.4%</td>
<td>11.8%</td>
<td>10.9%</td>
<td>14.5%</td>
<td>12.5%</td>
<td>12.8%</td>
<td>9.2%</td>
<td>4.4%</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 2</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>79.5%</td>
<td>11.7%</td>
<td>11.9%</td>
<td>12.6%</td>
<td>9.4%</td>
<td>10.4%</td>
<td>6.3%</td>
<td>6.7%</td>
<td>4.4%</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

http://www.cdc.gov/ifsps/results/ch2/table2-37.htm

Is it yeast?


- All women with pain were treated with miconazole oral gel for the nipple and the baby’s mouth, as well as oral antifungal medication (nystatin capsules).
- One week later, mean pain level had decreased significantly, supporting the author’s hypothesis that yeast was the causative agent.
- Interestingly, miconazole and clotrimazole are active against S. aureus as well as C. albicans.

**The Absence of Candida albicans in Milk Samples of Women with Clinical Symptoms of Ductal Candidiasis**

Thomas M. Hais, Tiffany L. Elizalde, Wencelin A. Fineman, and Pamela D. Berens

**Abstract**

Objective: The objective of this prospective study was to determine if Candida albicans is present in the milk of women suffering from symptoms of nipple and deep breast pain.

Study Design: The symptomatic group included women who reported pain, inflammation, or tissue changes at or near the nipple or breast pain. The control group included women without symptoms. The control group underwent a two-week washout period. There were no significant differences in the control and symptomatic group. There was no Candida growth in milk samples from women with symptoms of ductal candidiasis.

Results: There was no significant difference in milk cultures between the control and symptomatic group. No Candida species were cultured from either before or after the addition of milk to stimulate growth, with the exception of one patient. The addition of milk to milk samples suggested that milk does not inhibit the growth of Candida. These data suggest that C. albicans is not present in milk ducts and may not be associated with this syndrome.

**Is it yeast?**

<table>
<thead>
<tr>
<th>Controls</th>
<th>Yeast</th>
</tr>
</thead>
<tbody>
<tr>
<td>β Glucan</td>
<td></td>
</tr>
<tr>
<td>0%</td>
<td>3%</td>
</tr>
</tbody>
</table>


**How often is yeast there anyway?**

- Baby's mouth: 34.6%
- Mother's breast: 34.6%
- Mother's mouth: 43.6%


**Does Candida and/or Staphylococcus play a role in nipple and breast pain in lactation? A cohort study in Melbourne, Australia**

Lisa H Arne, Susan M O'Donnell, Suzanne M Goodall, Shahnaz H Tawil, Catherine M Bennett, Matthew S Payne

- Prospective study of 360 nulliparous women recruited during pregnancy
- Case: burning nipple pain & non-mastitis breast pain
- 19% of women reported these two symptoms in weeks 1-8
- Authors attributed pain at 1 week to adjustment to breastfeeding

**Is it yeast?**

- Burning nipple pain plus breast pain
  - 1-8 weeks: 52% Candida present, 48% No Candida present
  - 2-6 weeks: 48% Candida present, 52% No Candida present
- Not burning pain plus breast pain
  - 1-8 weeks: 66% Candida present, 34% No Candida present
  - 2-6 weeks: 66% Candida present, 34% No Candida present
Is it yeast?

- Comparing women with and without nipple pain:
  - Amir 1996: Staph aureus was more strongly associated with pain than yeast, and mothers improved with medication that treats both yeast and staph
  - Hale: In milk samples, there was more evidence of fungal species in control women than women with pain
  - Zolner: In an asymptomatic population, 1/3 of mothers and baby had yeast in their mouths and on the breast
  - Amir 2013: Half of women with burning nipple and breast pain had molecular evidence of candida – but so did 1/3 of women without pain

- Bottom line: There’s limited evidence for yeast as a major cause of breastfeeding pain

What causes breastfeeding-associated pain?

- Tissue trauma
- Irritation / Inflammation
- Superinfection / dysbiosis
- Maternal mood, catastrophization
- Disordered pain perception: migraines, vestibulitis, chronic pain

Fix the OBI: Tongue tie and breastfeeding-associated pain


Pain is not a unidimensional construct

Gracely pain scale

<table>
<thead>
<tr>
<th>Unpleasantsens</th>
<th>Intensity</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Very intense</td>
</tr>
<tr>
<td>2</td>
<td>Extremely intense</td>
</tr>
<tr>
<td>3</td>
<td>Very intense</td>
</tr>
<tr>
<td>4</td>
<td>Intense</td>
</tr>
<tr>
<td>5</td>
<td>Strong</td>
</tr>
<tr>
<td>6</td>
<td>Very strong</td>
</tr>
<tr>
<td>7</td>
<td>Extremely strong</td>
</tr>
<tr>
<td>8</td>
<td>Miserable</td>
</tr>
<tr>
<td>9</td>
<td>Desperate</td>
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<tr>
<td>10</td>
<td>Severe</td>
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<tr>
<td>11</td>
<td>Terrible</td>
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<tr>
<td>12</td>
<td>Horrible</td>
</tr>
<tr>
<td>13</td>
<td>Absolutely miserable</td>
</tr>
<tr>
<td>14</td>
<td>Not at all</td>
</tr>
<tr>
<td>15</td>
<td>Not at all</td>
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<tr>
<td>16</td>
<td>Not at all</td>
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<tr>
<td>20</td>
<td>Not at all</td>
</tr>
</tbody>
</table>

Maternal perception of pain

- Maternal mood, catastrophization
- Disordered pain perception: migraines, vestibulitis, chronic pain

Infant suck / pump use

Predisposition to eczema, vasospasm, inflammation

Infant / maternal exposure to antibiotics, dietary probiotics

Central nociception pathways

Disordered pain perception: migraines, vestibulitis, chronic pain

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<td>19</td>
<td>Not at all</td>
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<tr>
<td>20</td>
<td>Not at all</td>
</tr>
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Central nociception pathways
Catastrophization
Associated with activation of sensory processing structures in functional MRI studies.

<table>
<thead>
<tr>
<th>When I feel pain</th>
<th>Never think or feel that</th>
<th>Sometimes think or feel that</th>
<th>Always think or feel that</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It is terrible and I feel it's never going to get any better</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. It is awful and I feel it overwhelms me.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3. I feel my week isn't worth living</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4. I worry all the time about whether it will end.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5. I feel I can't stand it anymore.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6. I feel like I can't go on.</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>


Maternal mood and breastfeeding-associated pain
Early breastfeeding pain is associated with postpartum depression.

Prospective data from 2566 women who initiated breastfeeding in the Infant Feeding Practices Survey II.

<table>
<thead>
<tr>
<th>First Day</th>
<th>First Week</th>
<th>Second Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR postpartum depression at 2 months, severe pain vs. no pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.96</td>
<td>2.13</td>
<td>2.24</td>
</tr>
</tbody>
</table>


Depression and anxiety history is strongly associated with pain catastrophizing score in the MMI cohort. (p<.001)

AAP Guidance
Surveillance and screening for perinatal/postpartum depression is part of family-centered well-child care. Including postpartum depression screening in the practice's preventive services prompting system can help ensure a reliable process for addressing risk.

Case
- Presenting concern
  - Pain with breastfeeding during let-down, thus pumping and bottle-feeding
- History of postpartum depression
  - 1st and 3rd children, hospitalization for major depressive episode in 5 years ago
  - EPDS today 4, seen by psychiatrist this morning
- Observed feeding
  - Infant established good latch, but pulled away and clicked tongue during let down at time of increased maternal pain.
  - On/off latch after the let down, milk frequently spilling from sides of mouth. Choking with second let down.
Clinical Pearl: Depression affects both mood and maternal sensitivity

- When seeing a mom with a history of depression/anxiety, evaluate maternal symptoms and mother-infant interaction
  - This mother was unaware of infant’s response to overactive let-down, including coughing, writhing, and clamping to control flow
  - Depression/anxiety associated with impaired maternal sensitivity and intrusive behaviors
- Treatment requires both addressing mood symptoms and helping mom respond to infant cues while addressing presenting symptoms
  - Review cues, work with mother to understand baby’s needs and desires

What causes breastfeeding-associated pain?

- Tissue trauma
- Predisposition to eczema, vasospasm, inflammation
- Infant/maternal exposure to antibiotics, dietary probiotics
- Infant suck/pump use
- Maternal mood, catastrophization

Central nociception pathways:
- Maternal perception of pain
- Maternal perception

Phone triage, EPDS and LC evaluation

LC Phone Triage: Pain

- Infant with moderate to severe pain 1-2 hours
  - Infant with moderate to severe pain within 30 min
  - Infant with weight loss or no weight gain
  - Infants with vomiting, diarrhea, foul-smelling stools
  - Infants with fever
  - Infant with breast engorgement
  - Infant with breast engorgement
  - Infant with breast engorgement
- Infant evaluation
  - Mammography
  - Mammography
  - Mammography
- Infant evaluation
  - Mammography
  - Mammography
  - Mammography
- Infant evaluation
  - Mammography
  - Mammography
  - Mammography
Taking a careful history

- MotherBaby Dyad
  - Pregnancy complications, birth, early breastfeeding challenges
  - What has helped?
  - What hasn’t helped?
  - What is working well?
- Goals for breastfeeding

- Mother’s medical and surgical history
  - Skin disorders
  - Pain disorders
  - Metabolic disease
  - Mental health concerns
- Infant’s medical and surgical history
  - Prenatal ultrasound findings
  - Hospitalizations, sick visits

We use an intake form to get a comprehensive breastfeeding history

Phone triage, EPDS and LC evaluation

- Breastfeeding patient calls via phone
- EPDS (10 or more) or LC (not satisfactory)
- Manage per protocol

Mother’s medical and surgical history

- Skin disorders
- Pain disorders
- Metabolic disease
- Mental health concerns

Infant’s medical and surgical history

- Prenatal ultrasound findings
- Hospitalizations, sick visits
**Documentation**

Interventions that have been helpful:
- Pain: **Lactation consultant/counselor**
- Breastfeeding problems: **Lactation consultant**
- Interventions that have been somewhat helpful: **Lactation consultant interventions**
- Interventions that have not been helpful: **Lactation consultant interventions**
- Sleep: **Lactation consultant**
- Nutrition: **Lactation consultant**
- Birth Control: **Postpartum Birth Control**

**Pregnancy and Breastfeeding History**
- Weight gain during pregnancy: **Lactation consultant**
- How many bra cup sizes did your breast size increase: **Lactation consultant**
- Pregnancy and postpartum complications: **LACT ab postpartum complications**

**Evaluation and management by clinician and LC**

- Breastfeeding patient with nipple/duct pain:
  - Office visit: **Lactation consultant**
  - Breastfeeding counseling: **Lactation consultant**
  - Lactation center or home visit: **Lactation consultant**

**Differential Diagnosis**

- Evaluation and management with M/F/C/M/D:
  - Nipple shield: **Lactation consultant**
  - Other topical: **Lactation consultant**
  - Nipple feeders: **Lactation consultant**
  - Nipple shields: **Lactation consultant**
  - Breastfeeding flange: **Lactation consultant**
  - Breastfeeding bra: **Lactation consultant**

**Bacterial Infection**

- Yes: **S aureus**
- No: **MRSA**

- Treatment with synthetic antibiotics: **Lactation consultant**
- Treatment with Vancocin: **Lactation consultant**

**Nipple Infection**

- What is a nipple infection?
- You have a nipple infection. The bacteria that cause this infection live on normal skin and in healthy baby’s mouth. These bacteria can cause infections in mammary glands or cause sore nipples. Your baby can continue to breastfeed safely.

- What to do:
  - **Magnesium (Mg)**: Three times a day, rub a little bit of ointment into your nipples after a feeding. You don’t need to wash the ointment off before the baby’s next feed.
  - **Antibiotics for nipple infection**:
    - To treat this infection, we have prescribed you with an antibiotic. Please take the pills we prescribed, even if your pain gets better before you are done. This medicine is safe to use while you are breastfeeding.
E&M provider assessment: Pain ± trauma

- Vasospasm
- Oversupply
- Functional pain
- Ductal infection
- Candida
- History of nipple trauma
- Exquisite pain with light touch / brushing of nipple
- Shooting, burning pain
- Areolar color change during / after feeding (may be blanching or purple)
- Persistent shooting pain after local anesthetic applied to areola

Functional pain

- Allodynia: pain resulting from a stimulus (such as light touch of the skin) which would not normally provoke pain.
- Hyperalgesia: increased pain from a normally painful stimulus, such as pin prick.

Presenting symptoms and signs

- History of nipple trauma
- Exquisite pain with light touch / brushing of nipple
- Shooting, burning pain
- Areolar color change during / after feeding (may be blanching or purple)
- Persistent shooting pain after local anesthetic applied to areola

E&MEncounter Form.jpg

Lactation Quantitative Sensory Test

Quantitative Sensory Test

For each test ask the type of perception, intensity on scale of 0-10 and record distance from the nipple.

<table>
<thead>
<tr>
<th>QST</th>
<th>Cotton ball VAS (0-10)</th>
<th>Distance from Nipple (in cm)</th>
<th>Pin prick VAS (0-10)</th>
<th>Distance from Nipple (in cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lt. Lateral</td>
<td>Painful Unpleasant Yes feeding</td>
<td>Painful Unpleasant</td>
<td>Lt. Medial</td>
<td>Painful Unpleasant Yes feeding</td>
</tr>
<tr>
<td>Lt. Medial</td>
<td>Painful Unpleasant Yes feeding</td>
<td>Painful Unpleasant</td>
<td>Lt. Medial</td>
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<td>Lt. Medial</td>
<td>Painful Unpleasant Yes feeding</td>
</tr>
</tbody>
</table>

Asbill Sign

Functional pain / Vascular mediated pain syndromes (VMS):

- Non-painful
- Vascular
- Brachial plexus neuropathy
- Cervical Syndromes
- Costal Nerve Syndrome
- Dorsal Root Ganglion Syndrome
- Functional pain
- Functional hypogonadism
- Functional Abdominal Pain
- Adenofibromatosis
- Migraine headache
- Idiopathic Nerve Syndromes (INS)
- Carpal Tunnel Syndrome
- Complex Regional Pain Syndrome (CRPS)
- Reflex sympathetic dystrophy
- Other

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- Carpal Tunnel Syndrome
- Complex Regional Pain Syndrome (CRPS)
- Reflex sympathetic dystrophy
- Other
Functional Pain

- Descending pathways modulate pain signals, acting as a filter for sensory input.
- When this filter is broken, allodynia and chronic pain can develop.
- Fixing the pain requires repairing the filter.


Functional dysautonomia syndromes

Non-painful
- Syncope
- Postural Tachycardia Syndrome (POTS)
- Chronic Fatigue Syndrome
- Cyclic Vomiting Syndrome

Painful
- Functional Dyspepsia
- Functional Abdominal Pain
- Abdominal Migraine
- Migraine Headache
- Irritable Bowel Syndrome (IBS)
- Interstitial Cystitis
- Complex Regional Pain Syndrome (CRPS)
- Raynaud’s Syndrome
- Fibromyalgia
- Myofascial Pelvic Pain

Histamine

Potential mechanisms of antihistamines

From Jon Kabat-Zinn, Full Catastrophe Living.

Histamine potential mechanisms of antihistamines

From Jon Kabat-Zinn, Full Catastrophe Living.
Musculoskeletal pain

Case Report

Severe Breast Pain Resolved with Pectoral Muscle Massage

Edith Kernerman, IBCLC® and Eileen Park, BS, IBCLC, ND

Abstract

Many women stop breastfeeding because of breast and/or nipple pain, despite recommendations by the World Health Organization and major breastfeeding organizations. In the last 10 years, mastitis has been attributed to breastfeeding trauma. This case study describes the diagnosis and treatment of a woman who presented with severe mastitis (breast pain) and was not diagnosed as a conventional mastitis. After treating the patient with pectoral muscle massage and stretching, she reported complete resolution of their pain. This suggests that each of these mothers experienced compression of the upper thoracic muscles on their mammary neuromusculature.

Keywords

ultrasound, assessment tool, breastfeeding, breast milk, breast pain, compression, lactation, lactation, mammary, mastitis, neuromuscular, nipple pain, pectoral muscle massage, thoracic, surgery, resection

E&M provider assessment: Pain ± trauma

Ductal infection


Vasospasms

Over-supply

Functional pain

Ductal infection

Candida

E&M provider assessment: Pain ± trauma

Mastitis/Infection


Vasospasms

Over-supply

Functional pain

Ductal infection

Candida
Candida

- Topical or systemic antifungal used in yeast 24-48 hours?
- Yes
- Suspicious yeast infection?
- No
- Yes
- Infant with signs of oral thrush, vaginal discharge, or diaper rash?
- No
- Yes
- No
- Yes

What about APNO?


Bacterial Infection	Irritant Dermatitis	Candida

Mupirocin 2% ointment

Betamethasone 0.1% ointment

Miconazole powder to final concentration of 2%

Pain Scale (0-10)

APNO = Lanolin

5.53 5.6
3.15 3.29

Exclusive Breastfeeding

APNO = Lanolin

72% 60% 50%
64% 52% 50%

Work-up to choose which cream to use

Self-pay* State health plan

APNO
15g tube $61 n/a
30g tube $86 n/a

Flucinonide 0.05%
15g tube $11.99 $10
30g tube $12.99 $10

Aquaphor 1.75oz $5.99 n/a

Mupirocin 22g $34.99 $10

Clotrimazole 1% 30g $8.79 n/a

*Prices from Triangle Compounding Pharmacy and Drugstore.com

Work-up to choose which cream to use

?? ??
Differential Diagnosis

Take-home points

Most pain begins with traumatic injury to the nipple – a problem at the “oroboobular interface”

For mothers who are pumping, pain may result from pump overuse or misuse

Fixing pain requires fixing this problem – generally with the expertise of a lactation consultant

Trauma can cause a secondary problems:
- Mastitis
- Dermatitis
- Infection
- Vasospasm
- Functional pain

Cultures can be helpful to diagnose the secondary problem, but:
- Not all problems with nipples are yeast
- Not all oral thrush in infants is a problem
- Not all bacteria in milk or on nipples is a problem

The prevalence of postpartum depression and anxiety symptoms among mothers with breastfeeding-associated pain is high

Among women with a predisposition to chronic pain and/or anxiety, symptoms may persist after the trauma and/or the secondary problem resolve

Is this medication safe for breastfeeding?

Objectives

- Describe how drugs enter human milk
- Discuss infant and maternal considerations when medications are involved
- Be prepared to participate in a shared decision making discussion about the risks and benefits of breastfeeding while taking a medication vs. discontinuing breastfeeding

The placenta and the breast are not the same organ.

Drugs that are safe in pregnancy may not be safe in breastfeeding, and drugs that are safe in breastfeeding may not be safe in pregnancy.
Safety in Pregnancy ≠ Safety in Lactation

- During pregnancy the maternal liver and kidney act as detoxification and excretion resources for the mother and the fetus
  » During lactation, the infant has to take care of excretion on his own
- In utero the fetus may receive more of a drug through circulation, depending on whether and at what levels it crosses the placenta
  » During lactation, the infant only receives what comes through the breast milk
- Avoid translating data pertaining to these two states back and forth

How Drugs Enter Milk

- Primarily by diffusion, but also secretory methods
- Pass from maternal plasma compartment through capillary wall into the alveolar cells to penetrate milk
- During first 10-14 days postpartum, large gaps exist between alveolar cells which enhance drug absorption
- Subsequently cells swell, closing intracellular gaps and limiting access

How Do Drugs Get Into Milk?

- Drug entry
  ▶ Maternal plasma
  ▶ Oral Ingestion
- Clearance
  ▶ Drug entry
  ▶ Milk/plasma ratio
  ▶ Infant plasma
  ▶ Child age, gestational age, concurrent illness
- Halflife, Maternal drug metabolism
- Molecular weight, ionization, solubility, protein binding, mechanism of transport
- Drug properties to consider
  ▶ Protein binding
  ▶ Lipid solubility
  ▶ Ion trapping
  ▶ Oral bioavailability
  ▶ Molecular weight
  ▶ Half-life

Protein and Lipid Binding

- Drugs highly protein-bound remain in maternal plasma and don’t penetrate tissues or milk
  » One of the most important parameters in choosing a safe drug for a nursing mother
- Conversely, avoid extremely lipid soluble drugs which penetrate milk freely
  » Especially true of CNS depressants

Oral Bioavailability

- Refers to how much medication ingested reaches the plasma
- Generally far less than one percent of the maternal dose of a drug will ultimately find its way into the milk and subsequently the infant
- Drugs that have poor bioavailability fail to reach the plasma for various reasons:
  » Drug is sequestered in the liver and cannot exit
  » Drug is destroyed in the gut (proteins, peptides, etc)
  » Drug is not absorbed in the small intestine
**Molecular Weight**
- Drugs with molecular weights of less than 300 considered small and enter into milk in relatively higher concentrations
  - Alcohol
- Drugs with high molecular weights basically unable to penetrate into the milk compartment
  - Heparin
  - Insulin

**Ion Trapping**
- Due to lower pH of milk, physiochemical structure of some drugs change and prevent its diffusion back to maternal circulation
  - pKa is the pH at which the drug is equally ionic and nonionic
  - More ionic drug less capable of transferring from milk back to maternal plasma
  - pH > 7.2 may become ion trapped
  - Iodides such as SSKI, Betadyne, I-131
  - Lithium

**Milk/Plasma Ratio**
- High milk/plasma ratio drugs like to enter milk, while low milk/plasma ratio are less attracted to the milk compartment and may or may not enter milk
  - Might not indicate the true risk of using the medication
  - A drug with a high M/P ratio, but very low plasma concentrations, might be safe
  - A drug with a low M/P ratio, but very high plasma concentrations, might be risky

**Transmission of Drugs Into Milk**
- Important to consider the risk of maternal medications on the breastfeeding infant
- Risk of exposure via milk vs. benefits of continued breastfeeding

**Infant Factors That May Impact Absorption or Drug Safety**
- Prematurity, SGA, high risk pregnancy
  - Low Apgar scores can often signal distress that will affect drug metabolism
  - Gestational age is important because younger babies:
    - Have higher internal water levels
    - Have lower levels of proteins for binding
    - Have lower body fat concentrations
- Inability to excrete the substance resulting in a build-up in its system
  - Low concentration of a drug in human milk does not mean the infant will be able to effectively excrete the drug
- Consider drugs that can be safely taken by the infant

**What is safe?**
- Medications for breastfeeding mothers
- Drugs that are safe for breastfeeding
- Consult a healthcare provider for advice on breastfeeding and medication use.
Minimizing the Effects of Maternal Medication

- Avoid long-acting forms of drugs when possible
- Schedule doses so the least amount of drug is in the milk
- Watch infant for any unusual signs or symptoms
- Choose drug that has the least propensity to transmit into the milk

Medication Contraindications

- Chemotherapeutic agents – anti-metabolites
- Radioactive compounds –
  1. Discuss discontinuing breastfeeding following the use of radioactive I\(^{131}\) because of increased risk of thyroid carcinoma in the infant
  2. Wait ~5 radioactive half lives before resuming breastfeeding (continue removal of milk during this time to maintain supply) – milk can be stored for 5-7 half lives and be safely used after exposure to most radioactive compounds
  3. Some radiopharmaceuticals may only require a brief interruption – consult Infant Risk Center or LactMed
Analgesics

- Acetaminophen, Ibuprofen and at normal dosage are safe
- Aspirin – According to LactMed, “Aspirin is best avoided during breastfeeding, especially with very young infants, although an occasional single low dose of aspirin daily is unlikely to cause problems in the infant.”

Opiate analgesia and breastfeeding

In April, 2005, a full-term healthy male infant, delivered vaginally, showed intermittent periods of difficulty in breastfeeding and lethargy starting on day 7. During a well-baby paediatric visit on day 11, the paediatrician noted that the baby had regained its birthweight. On day 12, however, he had grey skin and his milk intake had fallen. He was found dead on day 13.


Opiate analgesia and breastfeeding

Population Ultra-rapid metabolizers (per 100 people)

<table>
<thead>
<tr>
<th>Population</th>
<th>Ultra-rapid metabolizers (per 100 people)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whites (European, North American)</td>
<td>1-10</td>
</tr>
<tr>
<td>Blacks (African Americans)</td>
<td>3-4</td>
</tr>
<tr>
<td>East Asian (Chinese, Japanese, Korean)</td>
<td>1-2</td>
</tr>
<tr>
<td>Oceania, Northern African, Middle Eastern, Ashkenazi Jews, Puerto Rican</td>
<td>May be &gt;10</td>
</tr>
</tbody>
</table>
SERTRALINE – Anti-depressant


There is no widely accepted algorithm for antidepressant medication treatment of depression in lactating women. An individualized risk–benefit analysis must be conducted in each situation and take into account the mother’s clinical history and response to treatment, the risks of untreated depression, the risks and benefits of breastfeeding, the benefits of treatment, the known and unknown risks of the medication to the infant, and the mother’s wishes.

PSEUDOEPHEDRINE – Cold Meds

<table>
<thead>
<tr>
<th>Infant dose</th>
<th>39.6 µg/kg/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative dose</td>
<td>4.3%</td>
</tr>
<tr>
<td>AAP</td>
<td>Usually compatible w/ breastfeeding</td>
</tr>
<tr>
<td>Briggs</td>
<td>Limited Human Data – Probable Compatible</td>
</tr>
<tr>
<td>MMM</td>
<td>L3 for acute use, L4 for chronic use</td>
</tr>
<tr>
<td>LactMed</td>
<td>May interfere with lactation – avoid if lactation not well-established</td>
</tr>
</tbody>
</table>

24 hour milk production, cc

Placebo 784
Studied 623


ACOG Committee Opinion No. 656 and 658. AAP Clinical Report: The Transfer of Drugs and Therapeutics Into Human Breast Milk.

How long does she have to pump and dump after IV contrast?

Breastfeeding can be continued without interruption.

ACOG Committee Opinion No. 656 and 658. AAP Clinical Report: The Transfer of Drugs and Therapeutics Into Human Breast Milk.

Does hormonal contraception affect lactation?

It’s complicated…
Falling levels of progesterone postpartum coincide with upregulation of prolactin receptors, onset of lactose synthesis and milk production.


Case Report

‘Given uncertainty regarding the true effect of ENG implants on lactation, it seems prudent for healthcare providers to counsel each woman about a possible effect on milk supply so that she can monitor her infant for signs of impaired milk transfer.’


Obstetric care providers should discuss limitations and concerns within the context of each woman’s desire to breastfeed and her risk of unplanned pregnancy, so that she can make an autonomous and informed decision.

Committee Opinion No. 658

Other Drugs that May↓ Milk Supply
- Nicotine
- Alcohol
- Bromocriptine
- Estrogen-containing oral contraceptives
- Progesterone contraceptives implicated if begun in early postpartum period before milk supply is established

What About Caffeine?
- Levels of caffeine in breast milk are low, but it can accumulate in the infant
- If a mother drinks more than 6-8 cups of any caffeinated beverage a day the infant will often be wide-eyed, alert and not very sleepy
- If mom changes to caffeine-free drinks the infant will return to normal quickly
Drugs of Abuse and Alcohol

- Amphetamines, cocaine, heroin, and PCPs are contraindicated during breastfeeding
- Avoid breastfeeding for at least 2 hours after having a small amount of alcohol
- Alcohol can disrupt infant’s sleeping and sucking patterns
- Alcohol abuse and drug abuse are contraindicated

Issues with Methadone

- Methadone is an effective drug used to treat heroin and other addictions
- Concentrations of methadone found in human milk are low; therefore women stable on methadone maintenance should be permitted to breastfeed if desired
- Initiating methadone, or increasing the dose to >100mg per day, poses a greater risk of sedation in the infant
- Withdrawal from the drug by infants is not an easy process and usually requires more treatment for the infant

Substance use disorder

- Most illicit drugs are found in human milk, with varying degrees of enteral bioavailability
- Phencyclidine hydrochloride has been detected in human milk in high concentrations, as has cocaine, leading to infant intoxication.
- THC (marijuana) is present in human milk, and metabolites not found in human milk are found in infant feces, indicating that THC is absorbed and metabolized by the infant - long-term effects on infant development from perinatal THC exposure are unknown.

Which statement best describes your current stance on women who breastfeed and cannot stop using Marijuana?

- They should stop breastfeeding because it is harmful to expose the baby to marijuana.
- They should continue breastfeeding because the benefits of breastfeeding outweigh the harms of marijuana use.
- Whether they should stop breastfeeding depends on a number of factors.

**Table 1.** Time from beginning of drinking until clearance of alcohol from breast milk for women of various body weights. Alcohol metabolism is constant at 25 mg/dL and volume is of average height (1.62 m or 5’4”).

<table>
<thead>
<tr>
<th>Body Weight</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kg/m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60.1 (90%)</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
<td>0.9</td>
<td>1.0</td>
<td>1.1</td>
<td>1.2</td>
</tr>
<tr>
<td>50.1 (80%)</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
<td>0.9</td>
<td>1.0</td>
<td>1.1</td>
<td>1.2</td>
</tr>
<tr>
<td>40.1 (70%)</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
<td>0.9</td>
<td>1.0</td>
<td>1.1</td>
<td>1.2</td>
</tr>
<tr>
<td>30.1 (60%)</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
<td>0.9</td>
<td>1.0</td>
<td>1.1</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Does Marijuana get into milk?


<table>
<thead>
<tr>
<th>Mother THC Use</th>
<th>Maternal blood level</th>
<th>Maternal milk level</th>
<th>Infant urine level</th>
<th>Infant stool levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>1x/day</td>
<td>105 ng/mL</td>
<td>none</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>7-8x/day</td>
<td>350 ng/mL</td>
<td>none</td>
<td></td>
<td></td>
</tr>
<tr>
<td>unknown</td>
<td>86 ng/mL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Does THC in milk impact infants?


How early THC exposure might affect brain development


State and Federal Web Sites on THC


Lactmed

Marijuana use should be minimized or avoided by nursing mothers because it may impair their judgment and child care abilities. Some evidence indicates that paternal marijuana use increases the risk of sudden infant death syndrome in breastfed infants. Marijuana should not be smoked by anyone in the vicinity of infants because the infants may be exposed by inhaling the smoke. Because breastfeeding can mitigate some of the effects of smoking and little evidence of serious infant harm has been seen, it appears preferable to encourage mothers who use marijuana to continue breastfeeding and reducing or abstaining from marijuana use while minimizing infant exposure to marijuana smoke.
Substance use disorder

- Infants of drug-dependent women, at risk for multiple health and developmental difficulties, stand to benefit substantially from breastfeeding and human milk, as do their mothers.
- A prenatal plan preparing the mother for parenting, breastfeeding, and postpartum substance abuse treatment should be formulated for each woman.
- This care plan should include instruction in the consequences of relapse to drug or alcohol use during lactation, as well as teaching regarding formula preparation and bottle care should breastfeeding be contraindicated.

Herbs and Herbal Teas

- Some herbal teas are considered safe during lactation:
  - Chicory
  - Orange spice
  - Peppermint
  - Raspberry
  - Red bush
  - Rose hips
- Echinacea has not been researched but seems safe
- Ginseng considered problematic because it can cause breast problems and vaginal bleeding
- St. John’s Wort: effects are not clearly known

Galactagogues

- Historical use of fennel, fenugreek, blessed thistle
- Metoclopramide (Reglan and Maxeran)
  - May increase in milk supply;
  - Mothers with history of depression might not be good candidates (depression is potential side effect)
- Domperidone – effective at increasing milk production without side effects of Reglan
  - Not FDA-approved
  - Two good studies on domperidone that are scientifically evaluated through randomized, double-blind, placebo-controlled study
- Oxytocin nasal spray
- Thyrotropin-releasing hormone

Moringa

- Derived from leaves of the malunggay plant
- Randomized trial among NICU mothers
  - 250 mg moringa oleifera leaves every 12 hours vs placebo starting on postpartum day 3
  - Mothers instructed to pump every 4 hours
  - 81 mothers recruited, 68 analyzed

AAP Statement on Transfer of Drugs

- In summary, galactagogues have a limited role in facilitating lactation and have not been subject to full assessments of safety for the nursing infant. Nursing mothers should seek consultation with a lactation specialist and use nonpharmacologic measures to increase milk supply, such as ensuring proper technique, using massage therapy, increasing the frequency of milk expression, prolonging the duration of pumping, and maximizing emotional support.
Counseling and follow-up


2. Review information from LactMed and MMIM with mother and discuss risks of infant drug exposure vs. risks of disrupting breastfeeding for both mother and infant

3. Include LactMed L-rating and MMIM summary for the selected drug in patient AVS. Consider printing entire LactMed monograph and Medications and Mother’s Milk Summary and placing in chart/providing copy to mother to share with the infant’s provider.

4. With mother’s permission, copy infant’s provider on encounter documentation so that she can follow infant for any side effects.

5. When mother is taking medication and breastfeeding:
   a) Encourage her to share LactMed and MMIM information with her infant’s provider
   b) Review common/worrisome infant side effects
   c) Advise her that pharmacists may instruct her not to use the drug while breastfeeding, despite safety data
   d) Provide contact number for her to call with questions.

6. Time dose to minimize exposure, if possible: after feeding or before prolonged infant sleep.