

Protocol #15

Candidiasis (Thrush)



Protocol #15: Candidiasis (Thrush)

Candidiasis is an infection caused by a fungus or yeast called Candida albicans. It may infect the baby's mouth, anus or buttocks, the mother's breasts, vagina and/or hands. It can be passed back and forth between mother and baby. It can interfere with the success of breastfeeding. Both mother and baby must be treated simultaneously regardless of concurrent symptoms.

Observation and Assessment

With a Candida infection symptoms can appear in the mother and/or baby.

Assess the mother for:

- Persistent cracked or painful nipples that do not heal despite proper positioning and latching as well as effective sucking and swallowing (*Protocol #3: Signs of Effective Breastfeeding*).
- Painful nipples that develop suddenly when breastfeeding was previously going well.
- Severe nipple pain that lasts throughout the entire feeding and immediately after breastfeeding.
- Sharp shooting or burning pain in the mother's breast during or after breastfeedings.
- Nipples that may be red, sore, cracked, itchy, burning, or painful.
- Areolae that may be red, swollen, flaky/scaly, or shiny in appearance.
- Recurrent mastitis.

Assess the baby for:

- Change in breastfeeding behaviour.
- Temperament change, e.g., gassy, cranky behaviour.
- Breast refusal, e.g., repeated pulling off the mother's breast, making clicking sounds, or refusing to breastfeed because the baby's mouth is sore (Hafner-Eaton in Mohrbacher, 2003).
- Frequent breastfeeding.
- White patches or plaque on the tongue, gums, inner cheeks, or soft palate that cannot be wiped off with a clean damp cloth.
- Slow weight gain (*Protocol #12: Insufficient Breast Milk Supply*).
- Diaper rash that has raised, red, sore-looking pustules or red, scalded-looking buttocks (Riordan,

2010), or a rash that does not respond to zinc oxide treatment.

Possible Contributing Factors or Causes

Candidiasis may be associated with one or more underlying factors that may be mother and/or baby related.

Assess the mother for:

- A current Candida infection, e.g., vaginal.
- A history of recurrent vaginal yeast infection.
- A vaginal yeast infection during pregnancy, after delivery, or in recent weeks.
- Nipple trauma.
- Diabetes.
- Repeated or recent antibiotic therapy.
- Repeated use of plastic-lined nursing pads, which create a warm and moist environment for the growth of *Candida albicans*.
- Use of oral contraceptives containing estrogen.
- Repeated or long-term use of steroids, such as for asthma.

Assess the baby for:

- A current Candida infection.
- Repeated or recent antibiotic therapy.
- Repeated use of a pacifier.

Suggestions

1. Assess for possible cause(s) of the candidiasis (see previous section on *Possible Contributing Factors or Causes*). The mother and baby may need further assessment by a physician for diagnosis and treatment of the infection.

2. Provide the mother with suggestions for breastfeeding with candidiasis. Breastfeeding can and should continue during a Candida infection and throughout the course of antifungal treatment.

Before breastfeeding, encourage the mother to:

- Ensure that the letdown or breast milk ejection reflex is initiated. The baby's rooting, sucking and hand movements on the mother's breast are the natural stimuli for letdown when breastfeeding is initiated early and the baby is calm, before the baby is overly hungry and begins crying (*Protocol #3: Signs of Effective Breastfeeding*).

The mother can try the following techniques to initiate letdown:

- Breastfeed in a quiet, relaxed place.
- Use relaxation strategies, e.g., a warm shower, heat applied to her back and shoulders, relaxation breathing, a warm drink, supportive positions.
- Manage pain to support comfort and relaxation and facilitate breast milk letdown.
- Initiate breastfeeding early, before the baby is stressed and crying.
- Clothe the baby in only a diaper to promote skin-to-skin contact.
- Support the baby in a vertical chest-to-chest position, with the nose approaching the mother's nipple, to facilitate the baby's reflexes and self-attachment behaviours.
- Gently massage the mother's breasts. Apply moist or dry heat to the mother's breasts for a few minutes before or during massage until letdown occurs. Heat may be applied with a warm, wet towel or disposable diaper, a warm bath or shower, a bowl of warm water, a heating pad on low, or a hot water bottle wrapped in a cloth. Some mothers may prefer to apply a cool cloth if her breasts are feeling itchy or irritated. Then gently express some breast milk (*Protocol #19: Expressing and Storing Breast Milk*).
- Stimulate the nipples. Gently roll the nipples between the index finger and thumb for several minutes or until the letdown reflex occurs. Then gently express some breast milk (*Protocol #19: Expressing and Storing Breast Milk*).
- If only one side is sore, try breastfeeding on the pain-free side first until the letdown reflex occurs. Then switch to the sore side.

- Numb her nipple if it is sore just before latching by applying ice wrapped in a clean cloth to the sore nipple for a few seconds. Avoid prolonged exposure to the ice; this can inhibit the letdown reflex and cause tissue trauma.

During breastfeeding, encourage the mother to:

- Check for effective positioning and latching practices (*Protocol #2: Positioning and Latching*).
- Check for effective sucking and swallowing (*Protocol #3: Signs of Effective Breastfeeding*).
- Avoid pulling the baby off her breast. If the mother decides to take the baby off her breast before the baby is finished, suggest that she break the suction by trying one of these methods:
 - Press down on her breast near the baby's mouth.
 - Gently pull down on the baby's chin.
 - Gently insert a finger into the corner of the baby's mouth.
 - Bring the baby in closer to her breast so that the nose is covered briefly with breast tissue; this may be more effective for an older baby.

After breastfeeding, encourage the mother to:

- **Wash her hands frequently** to avoid spread of the candidiasis. Wash hands in warm, soapy water before and after breastfeeding, before and after handling her breasts or expressing breast milk, as well as before and after diapering the baby.
- Wash her breasts and nipples with clear water at the end of each breastfeeding and then air dry. Do not apply or leave expressed breast milk on her breast. Breast milk left on her breast may encourage the growth of *Candida albicans*.
- Apply a cool cloth for comfort. Some practitioners suggest that the mother apply a cool cloth soaked in vinegar to her breasts. Discontinue use if the mother's breasts become irritated.
- Avoid using breast pads if possible. If used, change breast pads after each breastfeeding or more often if they become wet.
- If breast pads are needed for leaking, use 100% cotton, not plastic-lined pads. 100% cotton breast pads are more breathable and reduce trapping of moisture against the nipples.
- Use well-ventilated breast shells between

breastfeedings if her nipples are too painful when they come in contact with a bra or clothing.

- Express both breasts after each time the baby is unable to breastfeed effectively. If breastfeeding is stopped for any length of time, encourage the mother to express each breast on a regular basis in order to maintain breast milk supply. Generally, this is at least 8 times a day, including once overnight, or more often if her breasts become uncomfortable or overly full (*Protocol #19: Expressing and Storing Breast Milk*).
- Avoid saving and freezing expressed breast milk (EBM) during a candidiasis outbreak. EBM can be used on the day that it is expressed.
- Sterilize all breast pump parts that touch the breast each day. Wash all items in hot soapy water first. Rinse thoroughly. Boil in a covered pot of water for 10 minutes. Allow the items to air dry.

Antifungal Precautions

Encourage family members to:

- **Wash their hands frequently** to avoid the spread of candidiasis. Wash hands in warm, soapy water before and after handling breasts, breast milk or infant feeding equipment, as well as before and after diapering the baby.
- Thoroughly wash and then boil once a day all items that come in contact with the baby's mouth, e.g., toys, pacifiers, bottle nipples, teethers.
 - Wash items daily in hot, soapy water first. Rinse thoroughly. Boil in a covered pot of water for 10 minutes. Allow the items to air dry.
 - Frequently wash toys that cannot be boiled in very hot, soapy water and rinse well.
- Pacifiers, bottle nipples, and teethers should be discarded and replaced with new ones after one week of antifungal treatment (see the following section on *Antifungal treatment*).
- Avoid antibiotics unless absolutely necessary. When necessary, a short course of antibiotics should be used.
- Inform the sexual partner of the possibility of concurrent yeast infections and the need to be treated for candidiasis if there is a history of recurrent vaginal yeast infections. Use of condoms is recommended.
- Avoid bathing with other family members.

- Avoid sharing personal items with other family members (e.g., toothbrush, cup).
- Eat a well-balanced diet that follows *Eating Well With Canada's Food Guide* (Health Canada, 2007).

Antifungal treatment:

- Support the mother to make an informed decision about the use of antifungal treatment. It is important that she understand the benefits and risks associated with treatment for candidiasis to enable her to make a fully informed decision.
- Breastfeeding can and should continue throughout the course of antifungal treatment.
- Both the mother and baby need to be treated simultaneously with antifungal medication even if one of them is asymptomatic. Treatment may be needed even when cultures are negative for both the mother and baby.
- With antifungal treatment, the symptoms may worsen first before improving. The more severe the infection, the longer it will take the treatment to work.
- Topical treatments are usually the first course of treatment.
- Systemic treatments may be needed for recurrent or ongoing candidiasis.

Over-the-Counter Treatments

- Miconazole (topical)
- Ketoconazole (topical)

Treatments that Require a Prescription

- Nystatin (topical or oral)
- Medications including "azole", e.g., clotrimazole (topical), miconazole (topical), itraconazole (oral), ketoconazole (topical or oral), and fluconazole (oral).
- All Purpose Nipple Ointment (APNO)

For further information see *General Principles*.

- Although specific research has not been found to support the use of vinegar as a disinfectant in breastfeeding, it is readily available, inexpensive, and the idea for its use is suggested from other sciences such as microbiology and dentistry (Pinto, 2008). Some practitioners suggest using it

to disinfect items and clothing (Riordan, 2010; Tait, 2000; Pinto et al., 2008). However, it should be noted that some women may find it irritating to their skin (Hanna et al., 2011).

- Other creative suggestions found in the literature include application of tea bags and essential oils such as peppermint or tea tree oil. Although the evidence of their effectiveness is mixed (Abdul-Rahman et al., 2005; Agarwal et al., 2007; Devkotte et al., 2005; Inouye et al., 2009), many of these substances have been used traditionally in many cultures.
- Systemic antifungals may not combine well with some other medications. Before taking any other medicine or over-the-counter preparation, the mother should consult her primary health care provider.
- Some experts may recommend other topical preparations based on clinical observations. These may include mupirocin, grapefruit seed extract, or mixtures of mupirocin, betamethasone ointments, and miconazole powder.
- Controlled clinical trials for efficacy and appropriate treatment are not available (Lawrence, 2011). A review of Hale (2010a) indicates that there are no American Academy of Pediatrics (AAP) ratings for many antibiotics and steroids; their effects on the baby are unknown.
- It is also very important not to confuse grapefruit seed extract with grape seed, which can be very toxic.

General Principles

Candidiasis is a fungal infection caused by a yeast called *Candida albicans*. If the infant's infection is oral it may be known as monilia or thrush. In lactating women it may also be called Mammary candidiasis. *Candida* is a commensal organism colonizing the oropharynx, gastrointestinal tract, vagina and skin, usually without ill effect until a change disrupts the balance (Lawrence, 2011). It thrives in warm, moist areas such as the mother's nipples, breast milk ducts and vagina, and the baby's mouth and diaper area.

Candidiasis should be suspected if a mother has persistent sore nipples (Riordan, 2010), sometimes with no identified problems with latching, positioning, or sucking.

Riordan refers to candidiasis as a "family disease", because of the easy communicability and cross-

infection between family members (Riordan, 2010). Simultaneous treatment is recommended for all members with or without symptoms.

It is important to reassess positioning, latching, and sucking if candidiasis is suspected, before and after treatment.

Diagnosis is usually based on clinical signs and symptoms (Francis-Morrill et al., 2004). A survey of members of the Academy of Breastfeeding Medicine indicated that most physicians do not use laboratory cultures for diagnosis (Brent, 2001). Cultures are problematic because it takes several weeks for results and it is difficult to differentiate an infection from normal skin bacterial colonization (Chetwynd, 2002) because *Candida* is part of the normal flora. Francis-Morrill et al. (2004) reported that the predictive value of colonization was highest when combined with three or more signs or symptoms (Francis-Morrill et al., 2004).

Candidiasis must be treated with antifungal medication. Both the mother and the baby must be treated simultaneously even if one of them is asymptomatic. Breastfeeding can and should continue during a *Candida* infection and during the course of antifungal treatment.

Over-the-Counter Treatments

Miconazole or clotrimazole (topical) – Cream or lotion applied to the mother’s nipples or areole 2–4 times a day for 7 days (Amir et al., 2002). It is rated as L2 (safer), as very little is absorbed systemically (0.1%) and there is poor oral absorption (Hale, 2010a).

Ketoconazole (topical) – Cream or lotion applied directly to the mother’s nipples or areolae 2 to 4 times a day until at least 2 days after symptoms have disappeared (Amir et al., 2002).

Treatments that Require a Prescription

Nystatin (topical or oral) – Previously the most common medication prescribed for *Candida albicans*, although its effectiveness is questionable (Hale, 2010b; Chetwynd, 2002). Hale reports that some studies suggest that nystatin resistance is increasing and only 45% of strains are sensitive to nystatin (Hale, 2010b). Nystatin cream is applied to the mother’s nipples and areole. Nystatin suspension may be applied to the baby’s mouth, but is poorly absorbed orally (Hale, 2010b). If nystatin is prescribed, the cream and suspension will need to be applied to the appropriate areas after every breastfeeding for a course of 2 weeks. The cream will also need to be applied on the baby’s buttocks if a diaper rash is present. Due to poor oral absorption, there is little likelihood that it would get into the breast milk (Hale, 2010b). Hale rates it as L1 (safest) (2010a).

Fluconazole/diflucan (oral) – Fluconazole is used for mothers when topical treatments are ineffective. Hale advises that it is cleared for use in infants 6 months and older but not for neonates (Hale, 2010b).

Medications including the “azoles” – Includes clotrimazole (topical), miconazole (topical), itraconazole (oral), ketoconazole (topical or oral), and fluconazole (oral). (For further discussion see Hale, 2010b and CPS, 2007.)

All purpose nipple ointment – A compounded ointment developed by Canadian paediatrician Dr. Jack Newman, known as all-purpose nipple ointment (APNO) contains an antibiotic, steroid, and antifungal (Newman, 2009). It is commonly recommended but not yet researched (Mohrbacher,

2010; Lauwers & Swisher, 2011). Although Mohrbacher suggests it may be an option for Stage I, II and III nipple trauma (Mohrbacher, 2010), dermatologists rarely use a cream with multiple active ingredients because “the bad effects often outweigh the good” (Lawrence, 2011), and it is difficult to determine the source of a negative reaction.

Mothers may also find information about the management of *Candida albicans* available on the Internet. This may include information from Thomas Hale, a pharmacist with expertise related to medications and breastfeeding at:

- Thomas Hale’s website for parents:
<http://www.infantrisk.com/category/breastfeeding>.

Freezing breast milk contaminated with *Candida* will temporarily deactivate the yeast but will not destroy it (Riordan, 2010). If contaminated frozen expressed breast milk is fed to the baby after the treatment of candidiasis is completed, this could cause the infection to recur. It should be noted that freshly expressed breast milk can be fed to the baby during a candidiasis outbreak.

The **Antifungal Precautions** discussed above are based on the understanding that fungi like *Candida albicans* are considered to be microbes that require “intermediate-level disinfection”. Disinfection is a process that kills nearly all disease-producing organisms, including fungi, but not resistant bacterial spores (CPSO, 2004).

There is inconsistency among the recommendations regarding the cleansing and sterilization of equipment and toys.

The Canadian Paediatric Society recommends that parents boil items for 10 minutes (Sacks, 2009). Some practitioners recommend boiling items for 20 minutes when there is recurrent infection (Mohrbacher, 2010; Lauwers et al., 2011).

Some practitioners recommend boiling or treating items only when there is recurrent infection

(Mohrbacher, 2010; Riordan, 2010), recognizing that the amount of work is stressful for the family. The effectiveness of pharmaceutical treatment should be evaluated first.

Dietary recommendations – It is very important that lactating women eat a well-balanced diet that follows *Eating Well With Canada's Food Guide* (Health Canada, 2007). Some experts may recommend specific dietary changes to reduce the potential for recurrent candidiasis. It is important that the mother be encouraged to consult a Registered Dietitian before making any dietary changes:

- Examples include recommendations to reduce the ingestion of dairy products, heavily sweetened

foods and artificial sweeteners; to reduce the ingestion of alcohol, cheese, bread, wheat products, sugar, honey, and condiments; or to eat plain yogurt with active acidophilus or take acidophilus supplements, as these may decrease the recurrence of candidiasis.

- According to Heinig et al. (1999), these recommendations are not supported by the current scientific evidence. No studies were found of specific nutritional interventions among lactating women (Heinig et al., 1999).

References

- Abdul-Rahman, G.Y., Al-Dewachi, Z.B., Al-Dawood, A.D. (2005). Prevalence of *Candida albicans* in patients using fixed orthodontic appliances after the use of peppermint. *Al-Rafidain Dental Journal*, (1), 91–96.
- Agarwal, V., Lal, P., Pruthi, V. (2007). Prevention of *Candida albicans* biofilm by plant oils. *Mycopathologia*, 165, 13–19.
- Amir, L., Hoover, K. (2002). *Candidiasis & breastfeeding*, lactation consultant series 2, unit 6. Schaumburg (IL): La Leche League International.
- Brent, N. (2001). Thrush in the breastfeeding dyad: Results of a survey on diagnosis and treatment. *Clinical Pediatrics*, 40(9), 503–506.
- Canadian Paediatric Society [CPS]. (2007). Antifungal agents for common paediatric infections. *Paediatric Child Health*, 12(10), 875–878.
- Chetwynd, E.M., Ives, T.J., Payne, P.M., Edens-Bartholomew, N. (2002). Fluconazole for postpartum Candidal mastitis and infant thrush. *Journal of Human Lactation*, 18(2), 168–170.
- College of Physicians and Surgeons of Ontario [CPSO]. (2004). Infection Control in the Physician's Office. Electronic copy retrieved (2013) from: <http://www.ppsso.on.ca/uploadedfiles/policies/guidelines/office/infection-control2.pdf>.
- Devkotte, A.N., Zore, G.B., Karappayil, S.M. (2005). Potential of plant oils as inhibitors of *Candida albicans* growth. *FEMS Yeast Research*, 5, 867–873.
- Francis-Morrill, J., Heinig, M.J., Pappagianis, D., Dewey, K.G. (2005). Risk factors for mammary Candidosis among lactating women. *Journal of Gynaecologic and Neonatal Nursing*, 34(1), 37–45.
- Francis-Morrill, J., Heinig, M.J., Pappagianis, D., Dewey, K.G. (2004). Diagnostic value of signs and symptoms of mammary Candidosis among lactating women. *Journal of Human Lactation*, 20(3), 288–295.
- Hale, T. (2010a). *Medications and mothers' milk*. (14th ed.) Amarillo (TX): Hale Publishing.
- Hale, T.W., Berens, P. (2010b). *Clinical therapy in breastfeeding patients*. Amarillo (TX): Hale Publishing, 95–100.
- Hanna, L., Cruz, S.A. (2011). *Candida mastitis: A case report*. *The Permanente Journal*, 15(1), 62–64.
- Health Canada. (2007). *Eating well with Canada's food guide*. Electronic copy retrieved (2007) from: http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index_e.html.
- Heinig, M.J., Francis, J., Pappagianis, D. (1999). Mammary Candidosis in lactating women. *Journal of Human Lactation*, 15(4), 281–288.
- Inouye S, Takahashi, M, Abe, S. (2009). *Inhibitory Activity of Hydrosols, Herbal Tea and Related Essential Oils Against Filament Formation and the Growth of *Snaclica albicans**. *Jpn.J. Med Mycol*: 50, 243–251
- Lauwers, J., Swisher, A. (2011). *Counseling the nursing mother: A lactation consultant's guide*. (5th ed.) Sudbury (MA): Jones & Bartlett.

Lawrence, R.A., Lawrence, R.M. (2011). *Breastfeeding: A guide for the medical profession*. Philadelphia (PA): Elsevier Mosby.

Mohrbacher, N. (2010). *Breastfeeding answers made simple*. Amarillo (TX): Hale Publishing.

Pinto, T.M.S., Claro, A.C., Pereira, M.V., Cardoso, A.O. (2008). Vinegar as an antimicrobial agent for control of *Candida* spp. in complete denture wearers. *Journal of Applied Oral Science*, 16(6), 385–390.

Pirotta, M., Gunn, J., Chondros, P., Grover, S., Hurley, S., Garland, S.M. (2004). The PAV trial: Does lactobacillus prevent post-antibiotic vulvovaginal candidiasis? Protocol of a randomised controlled trial. *BMC Family Practice*. Electronic copy retrieved (2005) from: <http://www.biomedcentral.com/1471-2296/5/5>.

Riordan, J., Waumbach, K. (2010). *Breastfeeding and human lactation*. (4th ed.) Sudbury (MA): Jones & Bartlett.

Sacks, D. (2009). *The Canadian Paediatric Society guide to caring for your child from birth to age five*. Mississauga (ON): John Wiley & Sons.