



Mum & Baby
Academy

Clinical Review and Assessment

Candidiasis in Breastfeeding Mothers: Breaking the Chain of Infection

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Date of Publication: November 2016

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Module summary

Candidiasis of the nipple and breast can cause breastfeeding mothers considerable discomfort and even pain. Prompt diagnosis and effective treatment can ensure that women do not stop breastfeeding early due to candidiasis. This CPD module examines *Candida albicans*, which is a resilient species, and how to break the chain of infection.

Learning objectives

After studying this module, you should:

- Appreciate the prevalence and clinical significance of *Candida* colonisation and infections
- Be able to describe the factors that predispose breastfeeding mothers to candidiasis
- Understand the ways in which *Candida* can form 'chains of infection' and how to prevent reinfection
- Be able to advise and counsel women presenting with breast discomfort or pain about the possible role of *Candida*

Next steps

- Read the clinical review
- Complete the on-line assessment
- Receive CPD credit

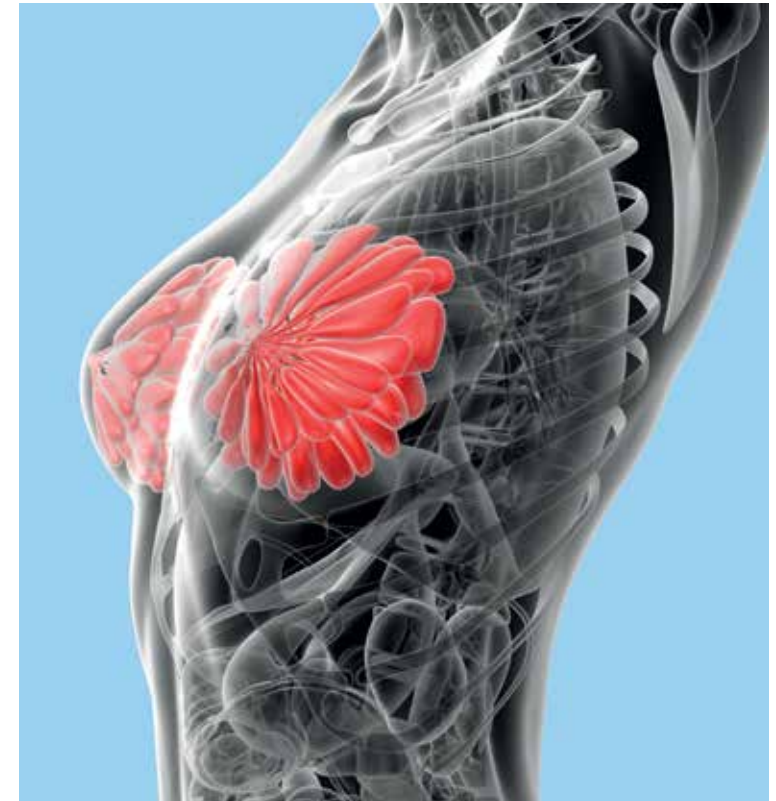
You must be registered to receive your CPD learning log

Authors

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Pre-learning reflection

Before completing this CPD module and assessment, please take a moment to answer these questions. If you log in, your responses will be recorded on your CPD learning log.

Questions:

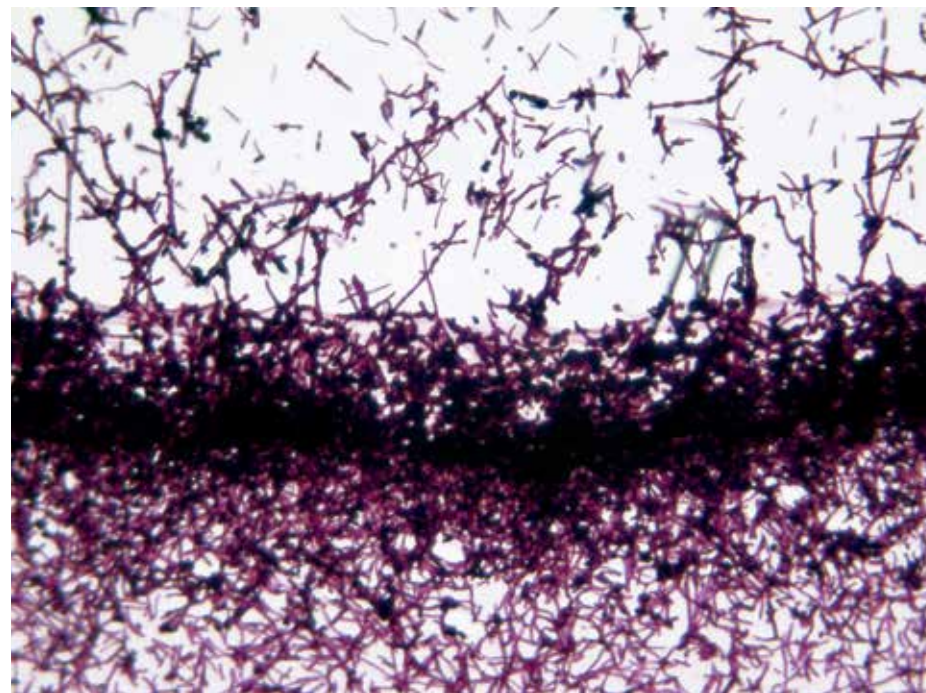
How often do you encounter candidiasis of the nipple and breast in breastfeeding mothers?

What factors do you believe contribute to the chain of infection that leads to candidiasis of the nipple and breast?

How often do you prospectively advise breastfeeding mothers about preventing and treating candidiasis of the nipple and breast?

Candida albicans

- *Candida* species are part of the normal, healthy microbiota¹
- Up to 80% of healthy women have *Candida albicans* (see image right) in their vagina²
- *Candida* species colonise 17% to 48% of healthy infants³
- *C. albicans* accounts for 85-95% of cases of vulvovaginal thrush and most cases of oral and systemic candidiasis^{4,5}
- *C. albicans* can grow as single-celled yeasts as well as multicellular filaments called hyphae^{5,6}
- When the yeast form of *C. albicans* sticks to the surface of a host cell, the fungus transforms into the hyphal form, which can penetrate the surrounding tissue¹

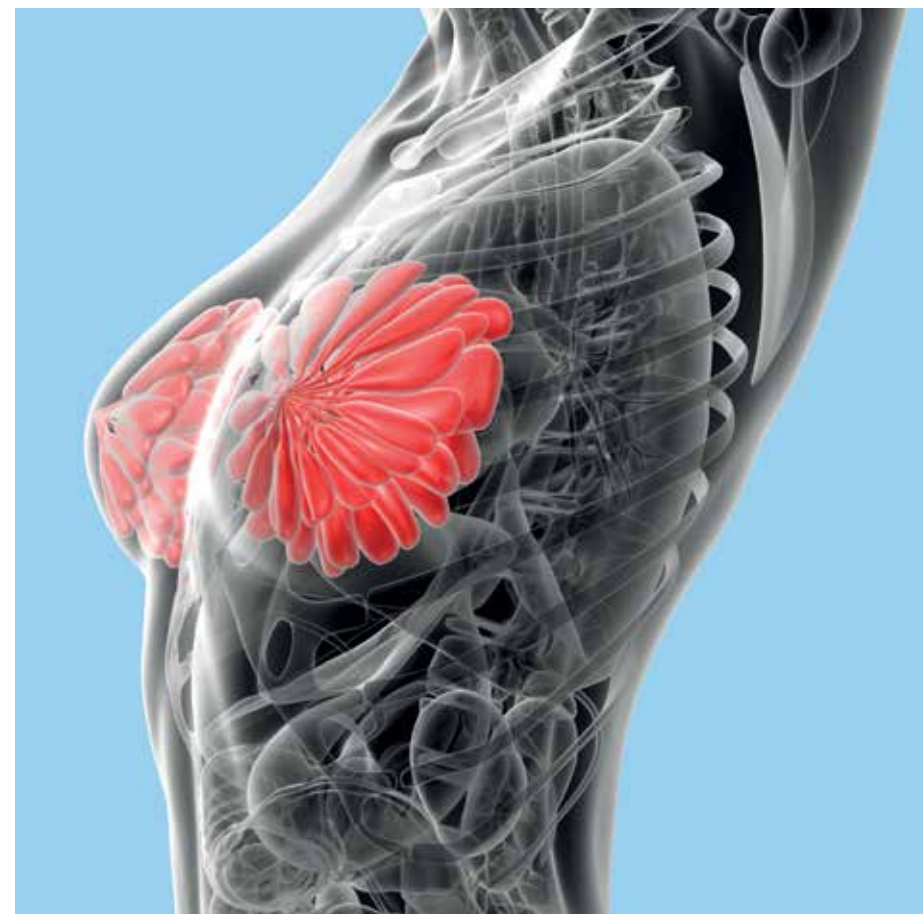


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References: 1. Fungi: A Very Short Introduction Oxford University Press 2016; 2. Journal of Human Lactation. 1991;7:177-81; 3. Clinical Pediatrics. 2001;40:503-6; 4. Current Infectious Disease Reports. 2015;17:1-6; 5. Infection, Genetics and Evolution. 2014;21:166-78; 6. J Basic Microbiol. 2002;42:207-27

Candida and nipple pain

- Conventional microbiological cultures may underestimate the prevalence of breast *Candida*. In the CASTLE study, for example:¹
 - Real-time polymerase chain reaction ('genetic fingerprinting') showed *Candida* species in swabs taken from the nipple of 33% of lactating women. Conventional culture suggested that only 3% of women were colonised with *Candida*
 - 54% of women with burning nipple pain and non-mastitis breast pain show *Candida* infestation compared to 36% of other women
 - *Candida* was associated with an 87% increased risk of burning nipple pain and non-mastitis breast pain compared to women without *Candida*
 - Mothers' reports of nipple damage more than doubled (2.3 fold increase) the likelihood of suffering nipple pain and non-mastitis breast pain



Symptoms

- Pain associated with candidiasis tends to be persistent; nipple shields, hand expression, using a breast pump or applying heat do not generally alleviate pain associated with candidiasis¹
- Pain related directly to infant feeding may be more likely to be mechanical rather than caused by candidiasis¹
- A breast affected by candidiasis may appear diffusely pink, show satellite lesions or striae radiating from the nipple; the nipple and areola may become bright pink, red or purple or darker¹⁻³
- Skin may seem shiny and, after a few days, may become flaky. Some women report breast itching; there is no rash^{2,3}
- Nipple pain that does not resolve or decline after the first week postpartum is potentially abnormal and candidiasis can be considered. Breast and nipple candidiasis can develop months after women begin breastfeeding^{3,4}
- Pain in association with a predisposing factor - such as vaginal thrush, oral or nappy candidiasis in the child or corticosteroid or antibiotic use - may help confirm the diagnosis²



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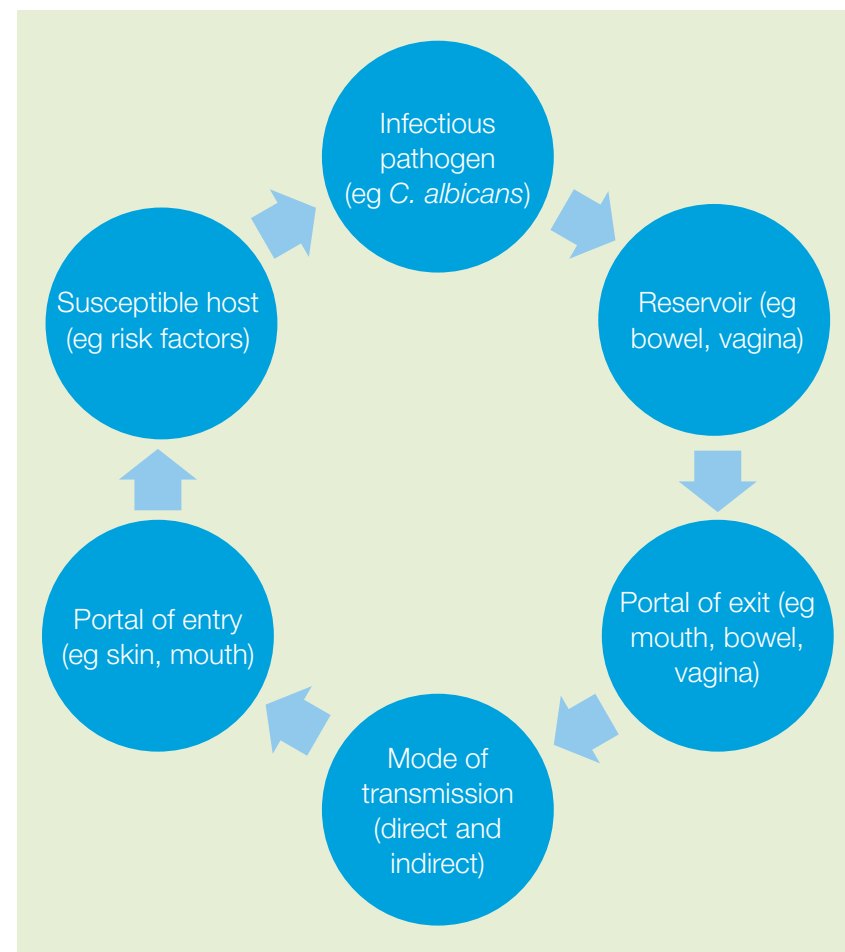
References: 1. *BMJ Open*. 2013;3:DOI:10.1136/bmjopen-2012-002351; 2. *Clinical Pediatrics*. 2001;40:503-6;
3. *Journal of Human Lactation*. 2015;31:319-20; 4. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*. 2011;40:753-64

Differential diagnoses

Diagnosis	Characteristics ^{1,2}
Eczema of the areola and nipple	Usually presents as acute vesicular eruptions and crusting; some women develop dry scaling dermatitis. Typically, eczema of the areola is distinct from, and does not affect, the nipple
Raynaud's syndrome of the nipple	Severe, throbbing, burning pain and blanched nipples. Cold can cause cyanosis, erythema or both. Cold exacerbates Raynaud's syndrome, while heat or nifedipine relieves the vasospasm, which is not generally the case with breast candidiasis
Bacterial infection of the nipple	Usually presents as red, inflamed, cracked nipples. Some women show exudate or fever
Inflammatory mastitis	Usually unilateral and manifests as redness, tenderness and hot swollen areas

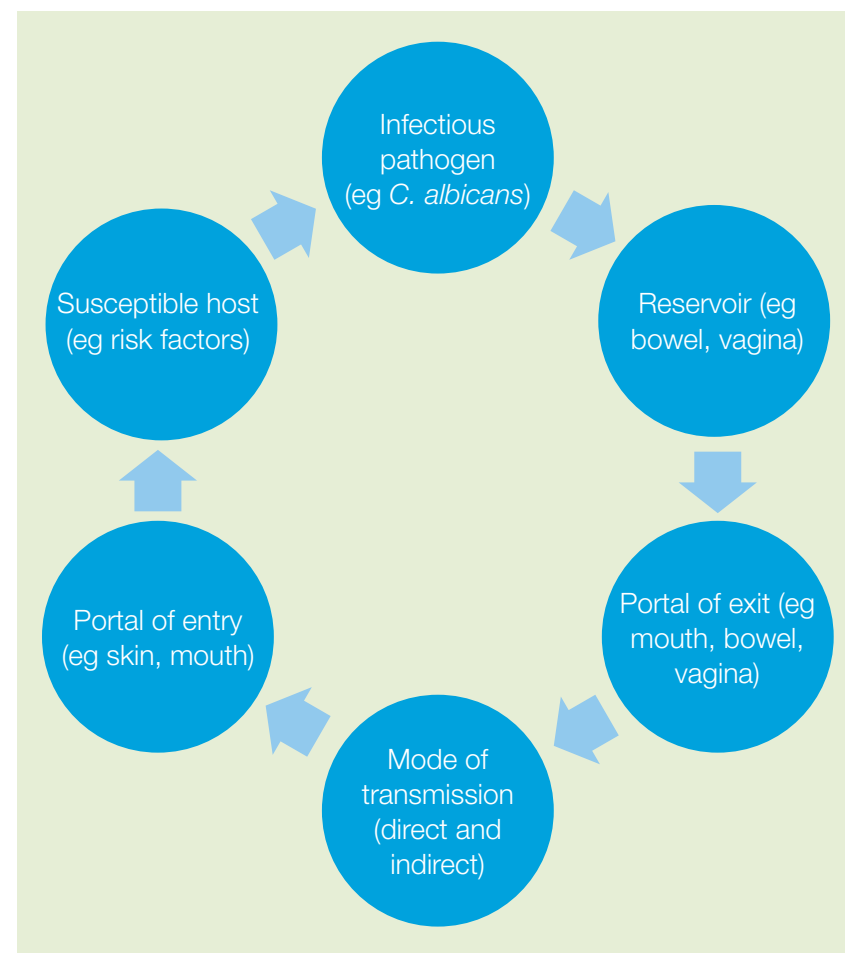
Chain of infection

- Trauma and local occlusion or maceration can predispose to breast candidiasis¹
- In candidiasis, the nipple's sensitivity is out of proportion to the clinical damage²
- Occlusion or maceration can predispose to breast candidiasis:¹
 - Pads and nipple creams should not be fully occlusive
 - Women should change their breast pads regularly³ and ideally use disposable pads
- Excessive washing and bubble baths and perfumed soaps may unbalance the vagina's protective microflora^{1,4} Mothers could consider using water and unscented soap
- Antibiotics may disrupt the microbiota, which can predispose to candidiasis¹
- Case reports suggest that children taking antibiotics can transfer *Candida* to the mother's breast¹



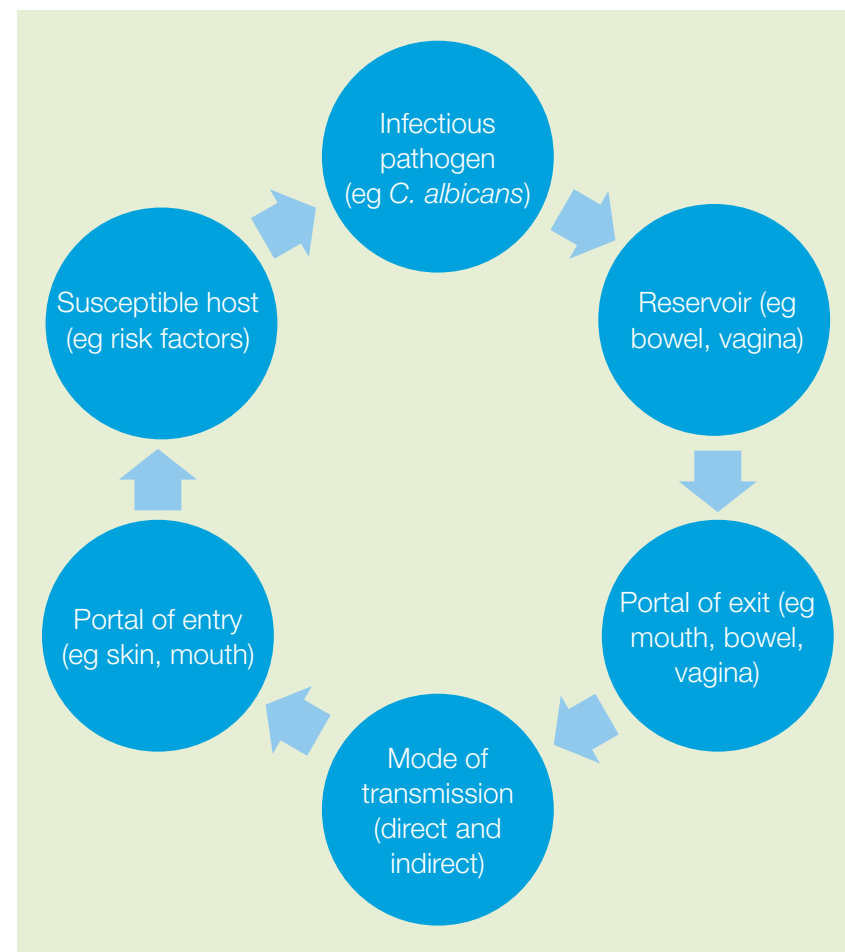
Chain of infection

- *Candida* can pass from the vagina to the baby's mouth during birth and, in turn, to the breast¹
- Healthcare professionals could be vigilant for signs of candidiasis:
 - In lactating women who experience discomfort during breastfeeding¹
 - In the babies, such as angular oral cheilitis and paronychia, which can transmit the infection¹
- Some babies develop oral candidiasis. Some mothers of a child with oral candidiasis are asymptomatic. However, they could still spread the fungus^{2,3}
- Infants of women with breast candidiasis were twice as likely to develop nappy thrush compared to controls, although this difference was not statistically significant¹



Chain of infection

- **Candida** can spread rapidly to other family members. So, health professionals should stress the importance of good hygiene to women and their families - and maintain a high standard of hygiene^{1,2}
 - Correct hand washing technique in hot soapy water is important to eradicate *Candida*
- Any item that comes into contact with the mother's breasts or the baby's mouth needs regular and thorough cleaning at as high a temperature as possible^{1,2}
 - Items such as soft toys, dummies, breast pump parts, towels, clothes (especially underwear), bottles and teats used for expressed milk can transmit *Candida*
 - Parents should replace nipple shields, dummies and teats regularly
 - Women should change their breast pads often and wear 100% cotton underwear.
 - Disposable breast pads may be preferable to washable ones
- Taking a probiotic that includes *Acidophilus* daily may help restore the healthy microbiome¹



Assessment

Question

What proportion of healthy women have *C. albicans* in their vagina?

- 40%
- 50%
- 60%
- 70%
- 80%

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Assessment

Answer

What proportion of healthy women have *C. albicans* in their vagina?

- 40%
- 50%
- 60%
- 70%
- 80%

Assessment

Question

In the CASTLE¹ study, what proportion of women showed colonisation of their nipple with *Candida* species using real-time polymerase chain reaction?

- 23%
- 33%
- 43%
- 53%
- 63%

Assessment

Answer

In the CASTLE¹ study, what proportion of women showed colonisation of their nipple with *Candida* species using real-time polymerase chain reaction?

- 23%
- 33%
- 43%
- 53%
- 63%

Assessment

Question

Which of the following is not usually associated with nipple candidiasis?

- Persistent pain
- Diffusely pink nipple with satellite lesions and striae
- Pain related directly to infant feeding
- The skin on the nipple seems shiny and, after a few days, may become flaky
- Pain in association with nappy candidiasis

Assessment

Answer

Which of the following is not usually associated with nipple candidiasis?

- Persistent pain
- Diffusely pink nipple with satellite lesions and striae
- Pain related directly to infant feeding
- The skin on the nipple seems shiny and, after a few days, may become flaky
- Pain in association with nappy candidiasis

Assessment

Question

Which of the following is a differential diagnosis for breast candidiasis?

- Eczema of the areola and nipple
- Raynaud's syndrome of the nipple
- Bacterial infection of the nipple
- Inflammatory mastitis
- All of the above

Assessment

Answer

Which of the following is a differential diagnosis for breast candidiasis?

- Eczema of the areola and nipple
- Raynaud's syndrome of the nipple
- Bacterial infection of the nipple
- Inflammatory mastitis
- All of the above

Assessment

Question

Which of these is not a means to break the chain of infection?

- Correct hand washing technique
- Cleaning any item that comes into contact with the mother's breasts or the baby's mouth
- Replacing nipple shields, breast pads, dummies and teats regularly
- Wearing 100% synthetic underwear
- Taking a probiotic that includes *Acidophilus* daily

Assessment

Answer

Which of these is not a means to break the chain of infection?

- Correct hand washing technique
- Cleaning any item that comes into contact with the mother's breasts or the baby's mouth
- Replacing nipple shields, breast pads, dummies and teats regularly
- Wearing 100% synthetic underwear
- Taking a probiotic that includes *Acidophilus* daily

Post-learning reflection

Please take a moment to answer these questions.

If you log in, your responses will be recorded on your CPD learning log.

Questions:

What are the two or three most important take-home messages you have learnt? What struck you as important?

Will you change the advice you give to about the management of candidiasis in breastfeeding women so how? If not why not?

How confident do you now feel advising breastfeeding women about breaking the chain of infection that can lead to candidiasis? How will you continue to improve your knowledge?



References and further reading

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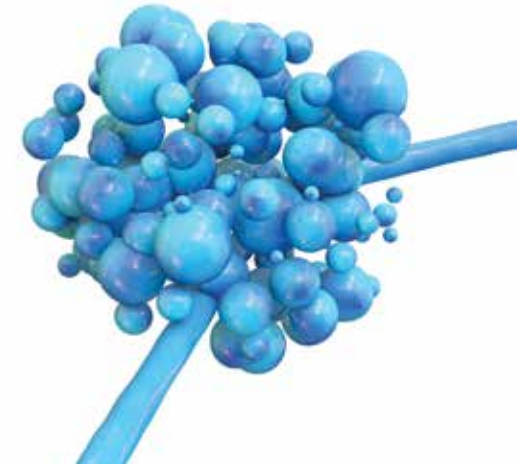
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Supporting women to overcome sore nipples and avoid candidiasis

- Lansinoh HPA® Lanolin, our multi-award winning nipple cream, is clinically proven to overcome breastfeeding challenges¹
- As a highly purified anhydrous nipple cream, Lansinoh HPA® Lanolin will not promote candidiasis of the nipple and breast²
- For more than 30 years, Lansinoh has been improving the manufacturing process to remove as many impurities from natural lanolin as possible
- The unique formulation of Lansinoh HPA® Lanolin offers a clinically proven, 100% natural product and is the only product of its type to be given the Seal of Approval by the British Allergy Foundation¹



As a highly purified anhydrous nipple cream, Lansinoh HPA® Lanolin will not support the growth of *Candida*.



Date of publication: November 2016

References: 1. Abou-Dakn M. et al (2011) *Skin Pharmacology and Physiology*, 24:27-35; 2. Lansinoh Loricon Testing Service. Bacterial, Fungi/Yeast Analysis. Croda Microbiological Testing and Analysis 2016

Supporting women to overcome sore nipples and avoid candidiasis

- Mothers tell us that “breastfeeding is challenging” but that Lansinoh HPA® Lanolin “provides instant relief”. Indeed, many tell us that “sore nipples can be a reason for giving up breastfeeding”. ¹ We found that:
 - 54% of breastfeeding mothers said that midwives were key to supporting them with their breastfeeding problem using our nipple cream
 - 74% say that Lansinoh HPA® Lanolin works within one hour²
- Lansinoh believe that women want to breastfeed for as long as possible. Together, we can help them overcome common problems, especially early on where positioning and attachment can be a key reason for women to stop breastfeeding³⁻⁶
- Your support of breastfeeding mothers is of great importance to us. Using your professional knowledge of the mother and the baby, you are well placed to provide breastfeeding expertise as well as understanding Lansinoh HPA® Lanolin as an intervention that helps heal sore nipples without supporting the growth of *Candida*⁷⁻¹¹



Before



After

Lansinoh HPA® Lanolin can promote the healing of sore nipples.

References: 1. Lansinoh Testimonials 2015; 2. HPA Lanolin Survey 2016; 3. *NHS England* (2015) Statistical release. Breastfeeding Initiation and Breastfeeding Prevalence 6-8 weeks, Quarter 1 2015/16; 4. Abou-Dakn, M. et al (2011) *Skin Pharmacology and Physiology*, 24:27-35; 5. NICE (2006) Postnatal care up to 8 weeks after birth; 6. Law, S. M., (2007) *Maternal and Child Nutrition* 3(3): 194-205; 7. NMC (2011) Changes to midwives exemptions; 8. NMC (2012) Midwives rules and standards; 9. NMC (2015) The Code Professionals standards of practice and behavior for nurses and midwives; 10. NMC (2007) Standards for medicines management; 11. Lansinoh Loricon Testing Service. Bacterial, Fungi/Yeast Analysis. Croda Microbiological Testing and Analysis 2016

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Your feedback...

Please rate the overall quality of this CPD module:

Excellent

Good

Fair

Poor

Before completing this module, how likely would you be to proactively suggest that new mothers remain alert for breast and nipple candidiasis?

Very likely

Likely

Neither likely or unlikely

Very unlikely

After completing this module, how likely would you be to proactively suggest that new mothers remain alert for breast and nipple candidiasis?

Very likely

Likely

Neither likely or unlikely

Very unlikely

Before completing this module, how likely would you be to suggest Lansinoh HPA[®] Lanolin nipple cream?

Very likely

Likely

Neither likely or unlikely

Very unlikely

After completing this module, how likely would you be to suggest Lansinoh HPA[®] Lanolin nipple cream?

Very likely

Likely

Neither likely or unlikely

Very unlikely

Please add any feedback or comments you have about Lansinoh and Lansinoh HPA[®] Lanolin nipple cream?



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