

# **Protocol #8**

## **Flat or Inverted Nipples**



## Protocol #8: Flat or Inverted Nipples

*The best test for nipple protractility is done by the baby at the mother's breast.*

### Observation and Assessment

- There are a variety of nipple appearances and inversions. Some nipples appear to protrude but will invert when compressed, whereas others will appear to invert but will protrude when compressed.
- Neither visual assessment nor self-reporting of flat nipples is adequate to determine nipple protractility.
- The best test for nipple protractility is done by the baby at the mother's breast. If the baby is breastfeeding well there is no need for further intervention.
- Some practitioners may use the **nipple pinch test** to clarify if a nipple is flat or inverted: Gently compress the areola about 1 inch from the base of the nipple, placing the thumb on one side of the areola and the index finger on the opposite side.



### Nipple Pinch Test

- Regardless of how the nipple performs during the nipple pinch test, it is important not to draw conclusions about the potential for breastfeeding success. Babies breastfeed, not nipple feed.
- Some mothers may doubt the functionality of their breasts because of variations in nipple appearance.

It is important to not make any statements to a mother about the suitability of her nipples for breastfeeding, as these may negatively affect her sense of breastfeeding self-efficacy. Language such as labelling a nipple as “flat” can similarly have negative effect on a mother's self-efficacy. (See *General Principles*.)

### Flat Nipple

#### *Assess the mother for:*

- A nipple that flattens when the nipple pinch test is done. The nipple may appear to be protruding, flat, or inverted before the test. A nipple that appears flat but protrudes with the nipple pinch test (or with cold or stimulation) is not truly a flat nipple. In this case, no special preparation is needed to draw out the nipple before breastfeeding.

#### *Assess the baby for:*

- A difficult latch and/or breast refusal.

### Inverted Nipple

#### *Assess the mother for:*

- A nipple that inverts when the nipple pinch test is done. The mother's nipple may appear to be protruding, flat, or inverted before the test. A nipple that appears inverted but protrudes with the nipple pinch test, or with cold or stimulation, is not truly an inverted nipple. In this case, no special preparation is needed to draw out the nipple before breastfeeding.
- A decreased breast milk supply. A truly inverted nipple may have fewer breast milk ducts. In addition, the nipple ducts may collapse or become occluded due to areolar edema as a result of breast engorgement or high suction by the baby (Wilson-Clay, 2011).

#### *Assess the baby for:*

- A difficult latch and/or breast refusal.

## Possible Contributing Causes or Factors

Flat or inverted nipples may have one or more possible causes.

### *Assess the mother for:*

- An areola that is non-elastic and difficult to compress. This type of areola will make it more difficult for the baby to latch onto the mother's breast.
- An engorged areola that may flatten a normally protruding nipple. This is most likely the case if the mother did not have a flat nipple until after birth.

The following are additional explanations for flat or inverted nipples:

- Adhesions that connect the nipple to the inner breast tissue.
- Less dense connective tissue located beneath the nipple.
- History of breast surgery or nipple piercing.

## Suggestions

- Assess for possible cause(s) of a flat or inverted nipple (see previous section on Possible Contributing Causes or factors).
- If the baby is unable to latch onto the mother's breast, refer to *Protocol #9: Breast Refusal or Difficulty Achieving or Maintaining a Latch* to rule out any other cause(s) for the latch problem.
- If the baby is able to latch onto the mother's breast but is not sucking effectively, refer to *Protocol #10: Ineffective Suck*.
- Provide the mother with suggestions for breastfeeding with flat or inverted nipples.

**Provide the following suggestions only if nipple flatness, lack of protrusion or inversion are interfering with breastfeeding.**

### *Before breastfeeding, encourage the mother to:*

1. Try to express some breast milk to soften the areola. She may wish to apply wet or dry heat to her breasts for a few minutes if the areola is difficult to compress. Heat may also be applied to the mother's back and shoulders. Heat may be applied with a warm wet towel or disposable diaper, a warm shower

or bath, a bowl of warm water, a heating pad on low, or a hot water bottle. To express breast milk, refer to *Protocol #19: Expressing and Storing Breast Milk*.

2. Try one of the following techniques to help the nipple to protrude:

- If the mother's nipple can be pulled out, grasp and roll the nipple between the thumb and index finger for a couple of minutes.
- Briefly touch the nipple with a damp, cold cloth for a few seconds to help it protrude and to reduce swelling. Avoid prolonged exposure to the cold cloth as this can inhibit the letdown reflex or cause tissue trauma.
- Use a breast pump immediately before feeding, just long enough to help draw out the nipple.

3. Try to promote areolar grasp with reverse pressure softening – For most women, gentle massage and expression are enough to soften a swollen areola. If these do not reduce the areolar edema it may help to try reverse pressure softening, as described by Cotterman (2004). Positive gentle pressure is applied by placing the fingertips around the base of the nipple to create a ring of “dimples”. This can reduce the swelling temporarily, enough to permit effective latching. It is best done with short nails and immediately before breastfeeding.

### *During breastfeeding, encourage the mother to:*

- Express some breast milk onto her nipple and areola to entice the baby to latch.
- Try shaping her breast to create more definition to the nipple. Compress her breast and areola between two fingers and the thumb to provide as much nipple as possible. This is sometimes referred to as a “nipple sandwich” (Wiessinger, 1998).
- Use a “C” or “U” hold to support her breast and slightly apply pressure with the thumb and fingers, pulling back towards the chest to help the nipple to protrude when latching.





### **"C" hold**

- Try gently pulling back on the breast tissue to create more nipple definition.
- Check for effective positioning and latching (*Protocol #2: Positioning and Latching*).
- Try using different positions to support the baby to achieve and maintain a deep latch, e.g., semi-reclined, football, or cross-cradle positions (*Protocol #2: Positioning and Latching*).

***If the baby breastfeeds well on one breast but is unable to breastfeed on the other side, encourage the mother to:***

- Continue to breastfeed on one breast, but offer the other breast. Then express from the other side after each breastfeeding. A rented hospital-grade electric breast pump is the most effective device for expressing and drawing out the nipple (*Protocol #19: Expressing and Storing Breast Milk*).
- Hold her baby skin-to-skin, with or without attempting to latch.

Refer to a breastfeeding expert or breastfeeding clinic for further assessment as soon as possible.

***If in the rare case that both nipples are flat and or inverted and the baby is unable to breastfeed on either side, encourage the mother to:***

- Begin to express regularly as soon as possible after birth and preferably within the first 6 hours after birth. Feed the baby with the expressed breast milk using an alternative feeding method, e.g., cup, spoon, syringe, or finger feeding (*Protocol #18: Alternative Feeding Methods*). If expressed breast milk is not available, then an appropriate supplement should be offered (*Protocol #17: Indications for Supplementation or Cessation of Breastfeeding*).

- Express each breast after each time that the baby is unable to breastfeed effectively. If breastfeeding is stopped for any length of time, the mother will need to express each breast on a regular basis in order to maintain her breast milk supply. Generally, this should be at least 8 times a day in 24 hours, with a minimum of 1 expression overnight, to mimic a normal feeding pattern. The mother may need to express more often if her breasts become uncomfortable or full (*Protocol #19: Expressing and Storing Breast Milk*).
- Hold her baby skin-to-skin, with or without attempting to latch.
- Refer to a breastfeeding expert or breastfeeding clinic for further assessment.

***If the mother continues to experience difficulties related to flat or inverted nipples, she may wish to consider the alternative strategies suggested below. Encourage her to:***

- Understand the possible benefits and risks associated with the use of nipple shields if she inquires about using them for flat or inverted nipples. Offer further assessment and refer for further support as needed (see notes in *General Principles*).
- Understand the possible benefits and risks associated with the use of breast shells if she inquires about using them for flat or inverted nipples. Offer further assessment and refer for further support as needed (see notes in *General Principles*).
- Hold her baby skin-to-skin, with or without attempting to latch.
- Continue to follow strategies to optimize breastfeeding.

## **General Principles**

Nipple protractility cannot be visually assessed (Wilson-Clay & Hoover, 2008). There are a variety of nipple appearances and inversions. Some nipples appear to protrude but will invert when compressed, whereas others appear to invert but will protrude when compressed.

Approximately 10% of pregnant women have flat or inverted nipples (Alexander et al., 1992). In many cases these nipple variations do not prevent the baby from breastfeeding effectively since the baby needs to latch onto the areola and not the nipple to

breastfeed. In addition, hormonal changes during pregnancy increase skin elasticity, which improves nipple protrusion. Most women will have good nipple protrusion by the end of their pregnancy. Generally, nipple protrusion improves with each pregnancy and breastfeeding experience.

Flat or inverted nipples are associated with sub-optimal early breastfeeding behaviour and with delayed onset of lactation (Dewey et al., 2003).

The baby may struggle at the mother's breast if he is unable to draw her nipple up and back into contact with the hard palate, interfering with the instinctive stimulus to suck (See *Suck Cycle* in *Protocol #3: Signs of Effective Breastfeeding*). The baby may also be frustrated if unable to create and sustain a seal, interfering with the ability to transfer breast milk and increasing the risk of low breast milk supply and low weight gain. It is important to offer early and ongoing assessment and support to optimize breastfeeding management as well as infant weight gain.

Compressing the mother's breast and areola between two fingers and thumb to stimulate a nipple helps to offer the baby as much breast as possible (Lawrence, 2011). Some women try the C hold described above. This has been described by Wiessinger using a "sandwich" analogy (Wiessinger, 1998). The mother holds her breast near the areolar border, with her fingers underneath and thumb on top of the breast. She presses in with the thumb and fingers while simultaneously pushing back towards the chest wall. This elongates and narrows the areola, giving the baby a "sandwich" or more breast tissue to latch onto.

**Breast Shells** – Breast shells are two-piece plastic devices that may be worn inside a bra over the nipple and areola. Women may wear them to improve nipple protractility by placing gentle pressure on the areola, which stretches and pushes the nipple forward (*Protocol #8: Flat or Inverted Nipples*). They may be worn with effect in the early weeks of breastfeeding, but prenatal use has been found to be ineffective (Alexander et al., 1992, MAIN Group, 1994). A wide-based shell may be worn to protect the tender nipple and areola from rubbing on a bra or clothing. Some mothers may use shells to relieve engorgement, worn about 20 minutes before feedings to redistribute fluid edema. Occasionally they may be marketed as a device for catching leaking breast milk between breastfeedings, although this is not recommended because of the risk of bacterial contamination

(Riordan, 2010). Some women may use them to collect leaking breast milk during a breastfeeding or pumping session.

The bra size should be bigger than the shell to avoid placing too much pressure on the delicate breast tissue. Such pressure increases the risk of plugged ducts. Shells should have multiple openings for air circulation to keep the skin from becoming softened or chapped. Although previously used to collect leaking breast milk and protect clothing, any breast milk collected should be discarded due to potential increased bacterial counts.

**Nipple Shields** – If the mother inquires about using a nipple shield to manage flat or inverted nipples, it is important to first explore with her any possible contributing factors related to flat or inverted nipples, as well as her breastfeeding self-efficacy related to her nipple shape. It is also important to inquire about her previous breastfeeding history, current breastfeeding management and attempts to manage her flat or inverted nipples, and then offer suggestions to optimize basic breastfeeding management before adding further interventions such as nipple shields (see earlier discussion regarding management of flat or inverted nipples).

Although not the first strategy recommended to manage flat or inverted nipples, short-term use of the newer ultra-thin silicone shields has been positively associated with preserving the breastfeeding relationship while the dyad learns to breastfeed (Meier, 2000; Wilson-Clay, 1996). Although a recent review of the literature reported that the current evidence does not yet demonstrate safe practices for the use of nipple shields (McKechne et al., 2010), expert practitioners continue to report the use of nipple shields as a possible strategy to bring babies to the mother's breast who might otherwise refuse the breast. Reasons for refusal may include flat or inverted nipples, prematurity, and/or imprinting (*Protocol #4: Sore Nipples; Protocol #9: Breast Refusal or Difficulty Achieving or Maintaining a Latch; Protocol #10: Ineffective Suck*). Nipple shields may provide temporary relief for a mother who is stressed or overwhelmed and prevent the introduction of a bottle, if she is supported appropriately by a lactation expert (Lauwers et al., 2011). Some mothers may wish to use nipple shields for longer periods; these dyads should be periodically reassessed. Lawrence advises against the use of a makeshift

shield; nor should shields be altered for use.

A nipple shield is an artificial nipple and areola shaped like a floppy sun hat and made of a synthetic material like silicone. Some women may have success placing one of the newer ultra-thin silicone nipple shields over the breast to facilitate latching and sucking. This has the potential to stimulate the baby's hard palate and thereby elicit the sucking reflex. It may be a familiar stimulus to coax a baby to the mother's breast who has already imprinted preferentially on the supernormal stimulus of an artificial nipple (Wilson-Clay et al., 2008).

Historically, there has been mixed evidence reported about nipple shields. Use of the older rubber or latex shields was associated with concerns of inadequate intake of breast milk that resulted in slow weight gain or failure to thrive (Woolridge, et al. 1980). Recent evidence has demonstrated weight gain to be similar over 2 months in babies fed with shields compared with babies fed without shields (Chertock, 2009).

To apply a nipple shield, it is important to use the correct fit and size. If the teat is too long for the baby's mouth it can cause gagging, but if it is too small it may not stimulate active sucking (Mohrbacher, 2010). The teat opening needs to be large enough to accommodate the mother's nipple comfortably; if it is too small it can slow the flow of breast milk or create friction and sore nipples. Lauwers recommends starting with the smallest shield that accommodates both the baby's mouth and the mother's nipple. Wilson-Clay advises matching the shield size to the baby's mouth, selecting the shortest available teat with the smallest base diameter (Wilson-Clay, 2011).

Clinicians and mothers may try varying methods to directly apply the shield. In one, the mother holds the rim of the shield between her thumb and fingers. Stretching the shield at the junction of the nipple and areola, she places the stretched shield over her nipple and releases the tension. As it releases and the shield returns to its normal shape, it draws the mother's nipple into the nipple cavity of the shield before the baby begins to suck. Some mothers may turn the top half of the shield inside out before placing it over the nipple. It is important to follow the manufacturer's instructions related to care and cleaning of the nipple shield. (For further information see *Wilson-Clay, 2011, Lauwers, 2011, and Genna, 2008*)

Nipple shields should not be the first strategy

recommended to manage flat or inverted nipples, and they should only be initiated by a health care provider who has the breastfeeding expertise to thoroughly assess the potential effectiveness and risks of use for that breastfeeding dyad. The practitioner is also responsible for establishing a plan with the mother for the ongoing management and evaluation of the intervention. Practitioners who do not have the capacity, i.e., lactation expertise or time, to continue to support the dyad appropriately should refer the mother to a lactation expert or breastfeeding clinic. The baby's weight gain and the mother's breast milk supply need to be monitored closely. There must be a comprehensive plan that includes periodic reassessment of breastfeeding and the infant's intake of breast milk, plus a plan for re-establishment of feeding at the breast.

**No Prenatal Intervention** – Previously, it was a common practice to encourage women with inverted nipples to wear breast shells or perform nipple exercises prenatally to draw out the nipple. Breastfeeding experts no longer recommend these practices. They have not proven to be effective and may damage a mother's confidence in her ability to breastfeed (Alexander et al., 1992; MAIN Group, 1994). As well, nipple exercises can damage delicate breast tissue and may stimulate uterine contractions during pregnancy. Emphasis is now being placed on providing pregnant women with information about proper positioning and latching techniques as well as getting skilled breastfeeding assistance in the early weeks after birth.

Mothers and practitioners have been creative over the years in trying to promote nipple eversion. In addition to the interventions described above, there are a variety of techniques described in the literature to promote nipple eversion, including application of inverted syringes, both home-made and commercial versions, rubber bands (Chakrabarti et al., 2011), and surgery. For further information see Lauwers (2011), Wilson-Clay (2008), Lawrence (2011) and Walker (2011). There is limited scientific research to support the use of these strategies. If a mother inquires about using these interventions, refer her to a lactation consultant or breastfeeding clinic for further assessment and support.

Breastfeeding self-efficacy is the confidence that a mother has in her ability to breastfeed her infant (Dennis, 1999). The mother must believe that she is capable of implementing any information or strategies that might be suggested (Bowles, 2011).

Many flat or inverted nipples will resolve before the end of pregnancy with no intervention, or may be resolved over time by the baby latching and sucking. For any intervention that is suggested, it is important to consider the mother's breastfeeding goals, her capacity to manage the intervention, the

baby's capacity to continue, how long it may take, and whether the baby can be kept at the mother's breast until the nipples evert, as well as how the baby will be fed in the meantime (*adapted from Wilson-Clay, 2008*).

## References

- Alexander, J.M., Grant, A.M., Campbell, M.J. (1992). Randomised controlled trial of breast shells and Hoffman's exercises for inverted and non-protractile nipples. *BMJ*, 304, 1030–1032.
- Bowles, B.C. (2011). Promoting breastfeeding self-efficacy. *Clinical Lactation*, 2(1), 11–14.
- Chakrabarti, K., Basu, S. (2011). Management of flat or inverted nipples with simple rubber bands. *Breastfeeding Medicine*, 6(4), 215–219.
- Chertock I.R.A. (2009) Reexamination of ultra-thin nipple shield use, infant growth and maternal satisfaction. *Journal of Clinical Nursing*, 18, 2949–2955.
- Cotterman, K. (2004). Reverse pressure softening: A simple tool to prepare areola for easier latching during engorgement. *Journal of Human Lactation*, 20(2), 227–237.
- Dennis, C.L. (1999). Theoretical underpinnings of breastfeeding confidence: A self-efficacy framework. *Journal of Human Lactation*, 15(3), 195–201.
- Dewey, K., Nommsens-Rivers, L., Heinig, M. (2003). Risk factors for suboptimal infant feeding behaviour, delayed onset of lactation, and excess weight loss. *Pediatrics*, 113(3), 217–223.
- Genna, C. (2008). *Supporting sucking skills in breastfeeding infants*. Sudbury (MA): Jones & Bartlett Publishers, p. 125–126.
- Lauwers, J., Swisher, A. (2011). *Counseling the nursing mother*. (5th ed.) Sudbury (MA): Jones & Bartlett, p. 154, 499–506.
- Lawrence, R.A., Lawrence, R.M. (2011). *Breastfeeding: A guide for the medical profession*. (7th ed.) Philadelphia (PA): Elsevier Mosby, 241, 243–244.
- Main Trial Collaborative Group [MAIN Group](1994). Preparing for breastfeeding: treatment of inverted and non protractile nipples in pregnancy. *Journal of Midwifery* 10(4):200–214.
- McKechnie, A.C., English, A. (2010) Nipple Shields: A review of the literature. *Breastfeeding Medicine*, 5(6), 309–314
- Meier, P. et al. (2000). Nipple shields for preterm infants: Effect on milk transfer and duration of breastfeeding. *Journal of Human Lactation*, 16(2), 106–114.
- Mohrbacher, N. (2010). *Breastfeeding answers made simple*. Amarillo (Tx): Hale Publishing.
- Riordan, J., Waumbach, K. (2010). *Breastfeeding and human lactation*. (4th ed.) Sudbury (MA): Jones & Bartlett, 84, 95–96, 216, 291–292.
- Walker, M. (2011). *Breastfeeding management for the clinician, using the evidence*. (2nd ed.) Sudbury (MA): Jones & Bartlett.
- Wiessinger, D. (1998). A breastfeeding teaching tool using a sandwich analogy for latch-on. *Journal of Human Lactation*, 14(1), 51–56
- Wilson-Clay, B., Hoover, K. (2008). *The breastfeeding atlas*. (4th ed.) Manchaca (TX): BWC/KH, p. 41.
- Wilson-Clay, B. (1996). Clinical use of silicone shields. *Journal of Human Lactation*, 12(4), 279–285.
- Woolridge, M.W., Baum, J.D., Drewett, R.F. (1980). Effect of a traditional and new nipple shield on sucking patterns and milk flow. *Early Human Development*, 4, 357–364.