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Physiology Of Lactation, Breast Milk & Breast Feeding

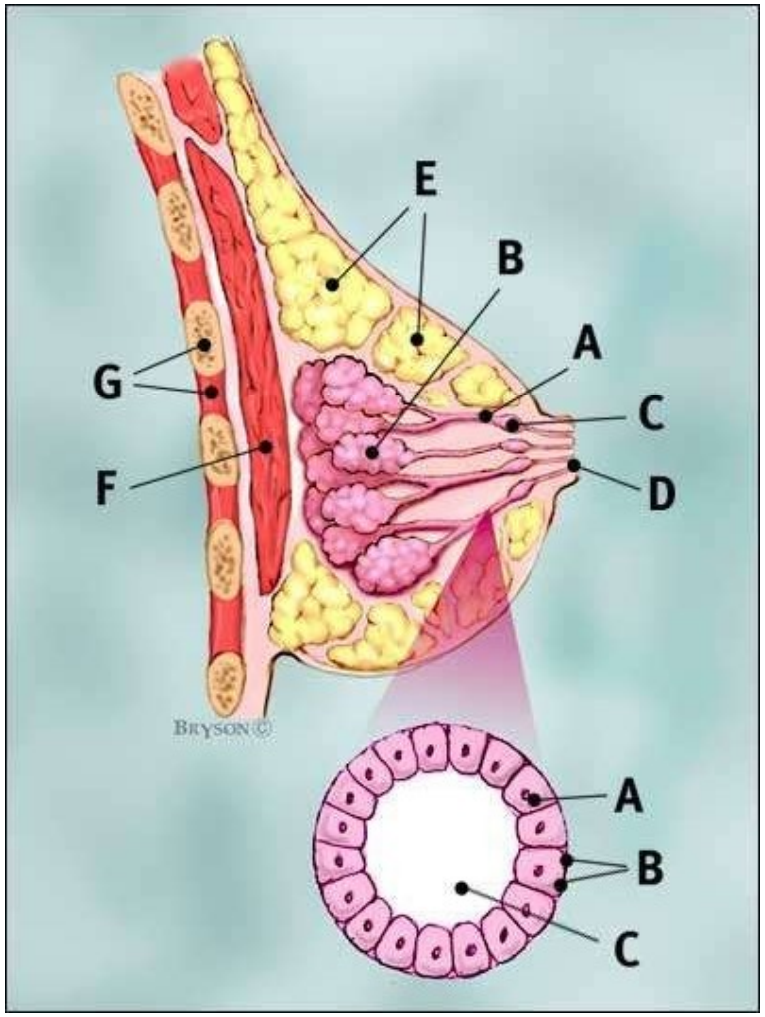
Breasts

Anatomy

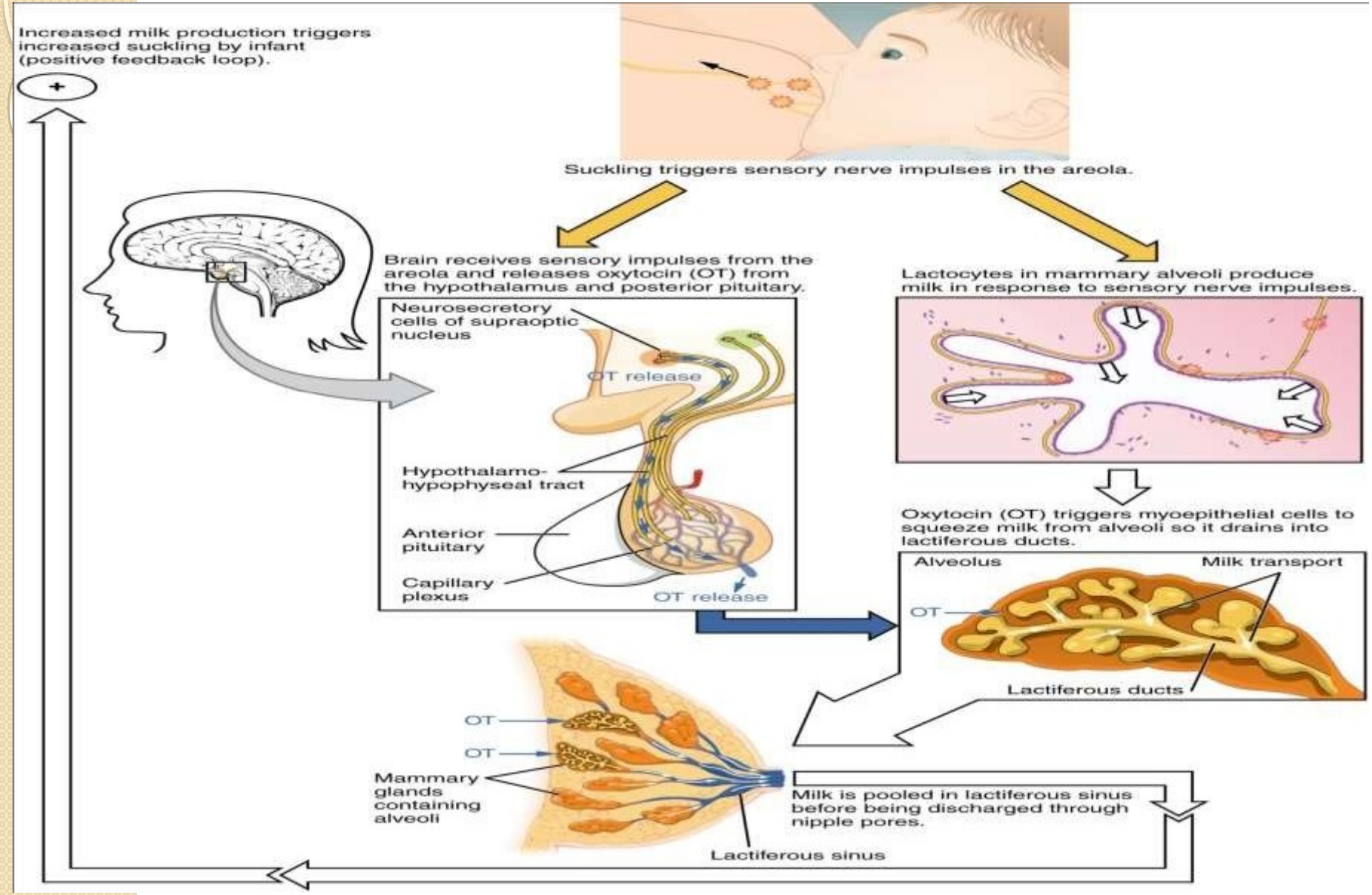
A ducts
B lobules
C dilated section of duct to hold milk
D nipple
E fat
F pectoralis major muscle
G chest wall/rib cage

Enlargement:

A normal duct cells
B basement membrane
C lumen (center of duct)



Physiology of Lactation



Physiological basis of lactation is divided into 4 phases

1. Preapration of breasts(Mammogenesis)

2.Synthesis and secretion of breast alveoli(Lactogenesis)

3. Ejection of Milk(Galactokinesis)

4.Mantainence of lactation(Galactopoiesis)

- **During pregnancy estrogen and progesterone secreted by the placenta prepare the breasts for lactation. The estrogen inhibits milk production until the end of pregnancy. In the 3rd trimester of pregnancy colostrum is present and remains for the first 3 days postpartum.**

- **By the 3rd stage of labor (delivery of the placenta), the hormonal production is reduced, and during the next 48 hrs, the blood level of estrogen and progesterone fall. This stimulates the anterior pituitary gland to produce the lactogenic hormone (prolactin hormone) which acts on the acini cells in the breast, and milk is formed.**

The milk is pushed along the lactiferous ducts and some is stored in the ampullae which lie just under the areola. When the infant sucks, he takes the nipple and the areola into his mouth, and partly by a vacuum which is created mostly by a chewing action of his jaws, milk is pushed into his mouth and he swallows.

As the ampulla and lower ducts are emptied, milk is pushed from the alveoli by contraction of the myoepithelial cells. So, the act of sucking by the infant is the stimulus that provokes lactation.

- **This effects a neuro-hormonal reflex mechanism which activates the anterior pituitary lobe to produce lactotropin, and the posterior pituitary lobe to produce oxytocin which reaches the breast through the blood stream, leading to contraction of myoepithelial cells, and the expulsion of milk.**

- **Oxytocin also stimulates uterine contractions causing after pains and lochial discharge during breastfeeding.**
- **With the onset of milk the breasts become larger firmer, heavier, and full of milk that can be expressed on pressure, or may escape spontaneously. This procedure is associated with a considerable local throbbing pain extending the axillae.**

- **Characteristics of breast milk. It is suited to the infant's needs, easily digestible,germ-free, fresh, warm and contains antibodies,vitamins, calcium, lactose, casein protein, fat, mineral salt and water. It is also readily available, and costs little.**

Types of Breast milk

Breast milk at different stages of lactation is defined by different terms.

Colostrum: is a thick, sticky and light yellowish in colour which is produced during the first few days after delivery. Although secreted in small quantities (30-90ml), it is sufficient to meet the caloric needs of a normal newborn in the first few days of life.

- **Transition milk :During a period of 1-2 weeks that follow the colostrum stage the milk increases in quantity and changes in appearance and composition as per the baby's needs, protein contents decrease while fat and sugar contents increase. At this time the breasts feel full, hard and heavy.**

Mature milk: This milk is thinner and watery but contains all the nutrients essential for optimum physical and mental development of the child. Mature milk changes even during the length of a single feed to exactly suit the needs of a baby.

The mature milk consists of Foremilk and Hind milk:

- **Foremilk : The milk which comes at the start of a feed. It has a low level of fat and is high in lactose, sugar, protein, vitamins, mineral and water. It satisfies the baby's thirst and is produced in larger amounts than hind milk.**

- **Hind milk: which comes later in a feed, is richer in fat which makes it look whiter and thicker than foremilk. It satisfies the babies hunger and supplies much of the energy of a breastfeed. It should be noted that a baby needs both the foremilk and the hind milk for appropriate weight gain. Also, babies who are fed both foremilk and hind milk sleep well.**
- **Preterm milk: is a milk produced by a woman who has delivered prematurely. This milk has more proteins, minerals, immunoglobulin and lactoferrin than the mature milk, making it suitable for the needs of a preterm baby. The preterm milk is ideal food for low birth weight babies. Term milk is produced by a woman who has a full term delivery. Its composition is suitable for normal term baby**

Breast feeding in the correct position

Art and technique of breast feeding

Step 1:

Find a comfortable position for your self. You may lie down; sit on a chair on the bed or on the floor to feed your baby. Most important is that you must feel comfortable and your back must be supported

Step 2:

Hold your baby in your arm so that her head and neck rest in the bend of their elbow , the back along forearm and the buttocks in your hands if your feeding on your right breast your right arm should be used to cradle your baby.

Step 3:

Turn the baby's entire body towards yours so that the baby's tummy touches your tummy. The babies head and neck should be supported

Step 4:

Raise the baby to the level of your breast so that the babies mouth can easily reach the nipple and the areola. This could be made possible by putting a pillow below your arm or raising your thigh if your sitting crossed leg on the floor.

- **Make sure that the baby is not exclusively clothed so that the baby can be brought really close to you. Some times you may need to tuck your babies arm away. So that it does not come in the way. You may use your free hand to hold your breast or to fondle your baby once your baby is really attached.**

Step 5:

When the nipple touches, the baby's lips or the cheek, your baby's mouth will reflexively open to draw the nipple and part of the areola in to form a teat. this is known as "attachment to the breast" the lactiferous sinuses which are the storehouses of milk are situated beneath the areola.

- To effectively suckle milk from the breast, both the nipple and the areola should go into the baby's mouth. Proper attachment is the key to successful breast feeding, improper attachment is responsible for most of the problems related to breast feeding like sore nipple, congested breast and inadequate milk supply
- Body position: The mother should feed her baby in any comfortable position such as lying or sitting with good eye contact. Good and bad body positions are shown in Fig. a & b.

A

B

Pic . a: Good body position

- Baby's head and neck is straight or bend slightly back.
- Baby's body is turned towards the mother.
- Baby's body is close to the mother facing breast.
- Baby's whole body is supported.

Mother baby eye contact is there

Pic . b: Bad body position

- **Baby's head and neck not straight.**
- **Baby's body is turned away from the mother.**
- **Baby's body is away from the mother.**
- **Baby's body is not supported.**

There is no eye contact between the mother and baby

Breast-Feeding Positions

Cradle hold

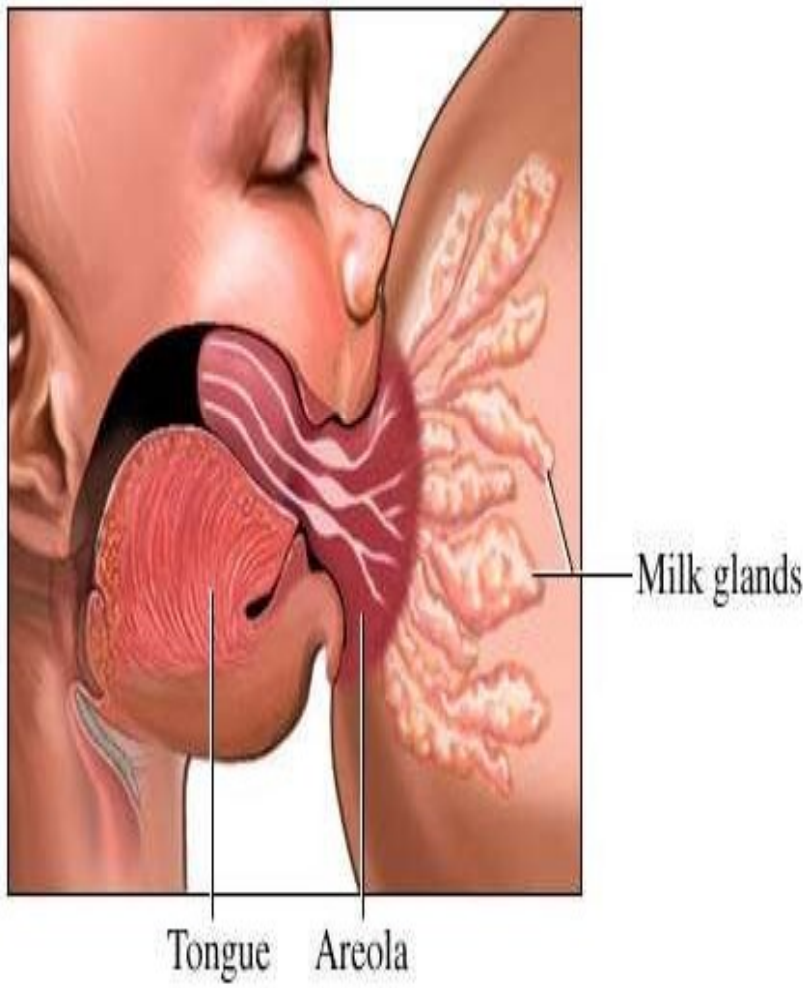
Cross-cradle hold

Football hold

Lying down

Attachment

attachment refers to the emotional connection between a patient and her infant. This attachment is reciprocal; both the mother and the infant exhibit attachment behaviors. The infant responds to the patient by cooing, grasping, smiling, and crying.



However, these behaviors are nondiscriminatory before approximately 8 weeks. Nurses can assess for attachment behaviors by observing the interaction between the mother and her infant. Behaviors indicating a positive attachment include:

- **Touching**
- **Holding**
- **Kissing**
- **Cuddling**
- **Talking and singing**
- **Choosing the "en face" position**
- **Expressing pride in the infant**

Any Questions…???


THANK YOU