

Physiology of lactation and it's management

Introduction



"The more we know about human breast milk the more we discover about its value in human nutrition and development".

American Academy of Pediatrics Recommendations

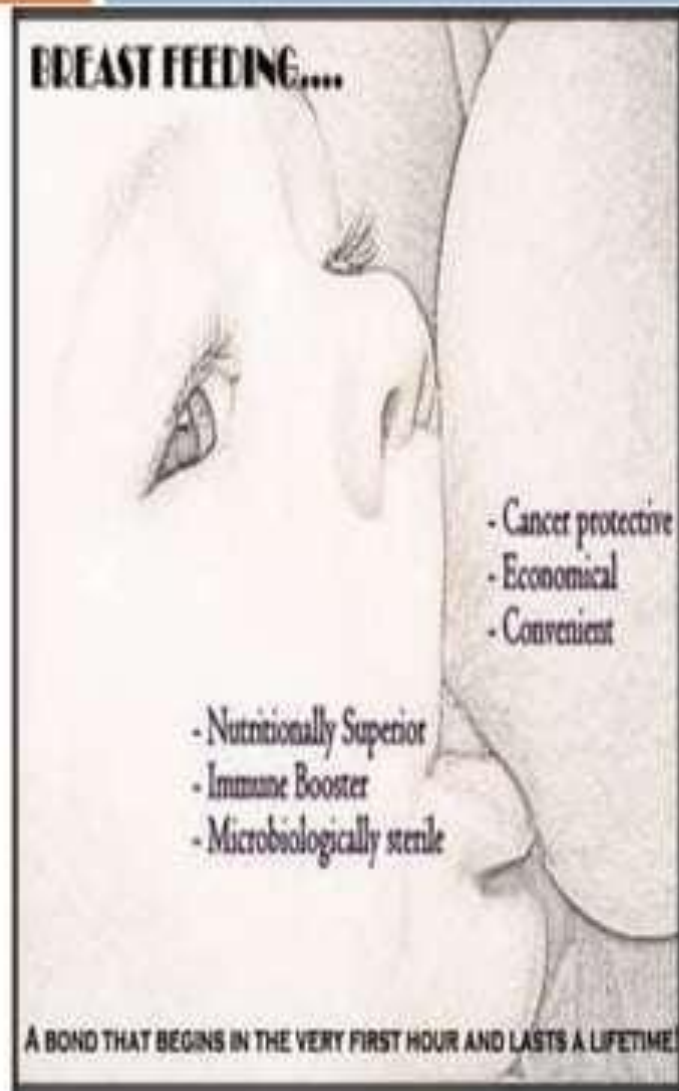
- ❑ Exclusive breastfeeding for the first six months of life
- ❑ Continued breastfeeding for at least one year,
- ❑ As long as is mutually desired by mother and child

Exclusive breast feeding



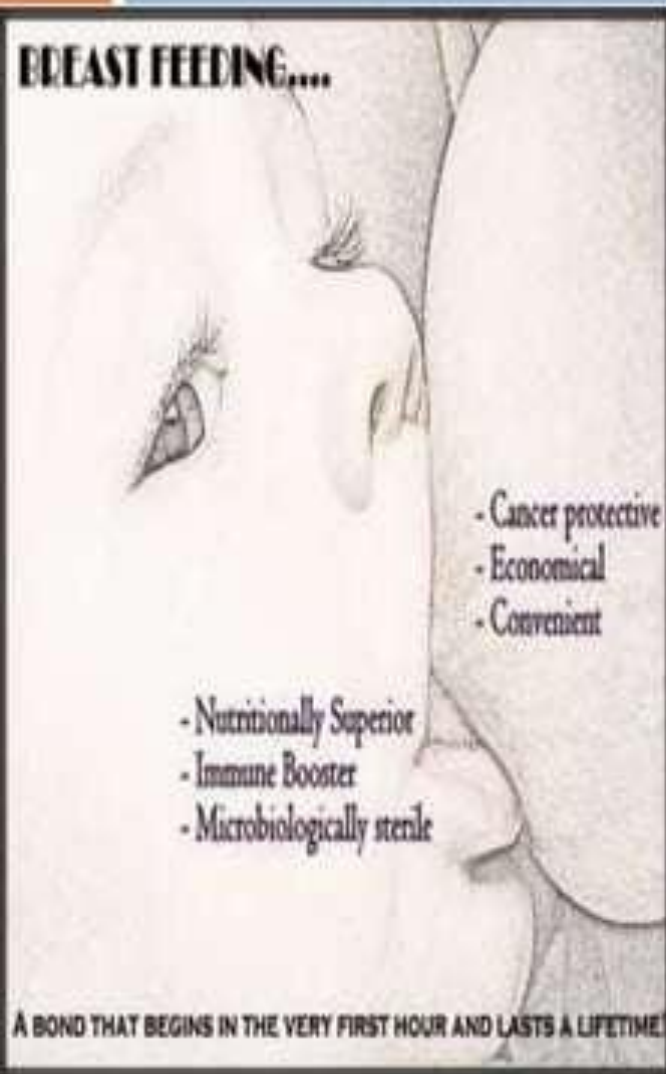
- ❑ Exclusive breast feeding means feeding the baby with breast milk soon after birth and continuing it until 6 month of age without giving baby any other food .The baby is given only breast milk and nothing else whenever the baby is hungry.

Components and benefits of Breast milk



1. Carbohydrates:-
2. Proteins
3. Fats
4. Vitamins & Minerals
5. Water & Electrolytes
6. Immunological Superiority
7. Protection against other illness
8. Growth & Development
9. Easily digestible

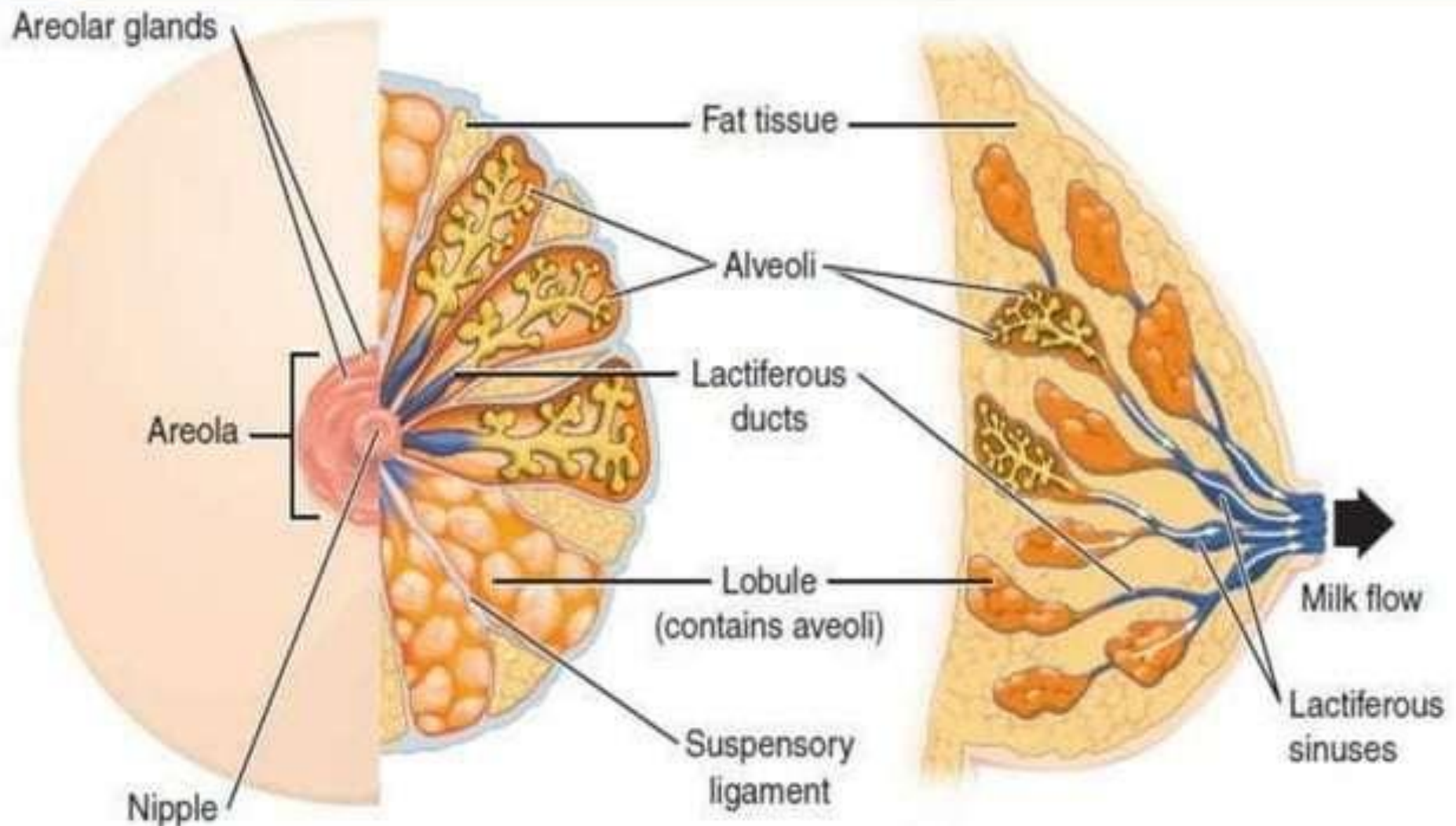
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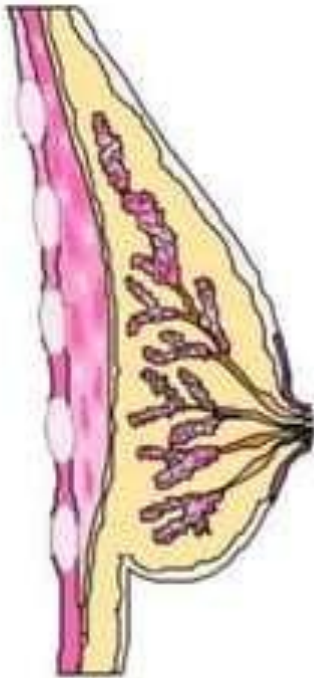


Benefits to mother

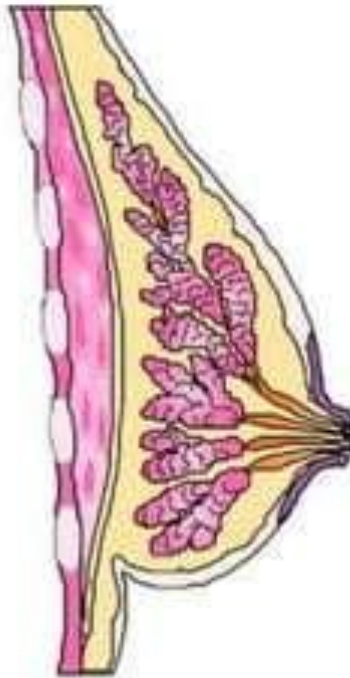
- ☐ Helps uterine involution
- ☐ Reducing chances of postpartum hemorrhage.
- ☐ Lactational amenorrhea
- ☐ Helps in birth spacing.
- ☐ Convenient & time saving.
- ☐ Reduces the risk of cancer
- ☐ Improves the figure of the mother

ANATOMY OF BREAST

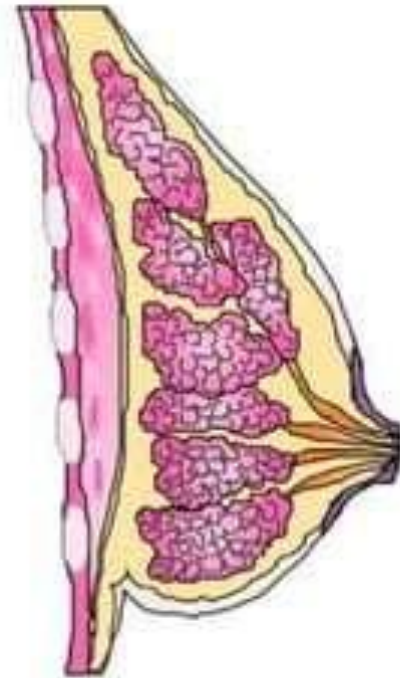




Nonpregnant



Pregnant



Lactation

Three sagittal views of the breast.

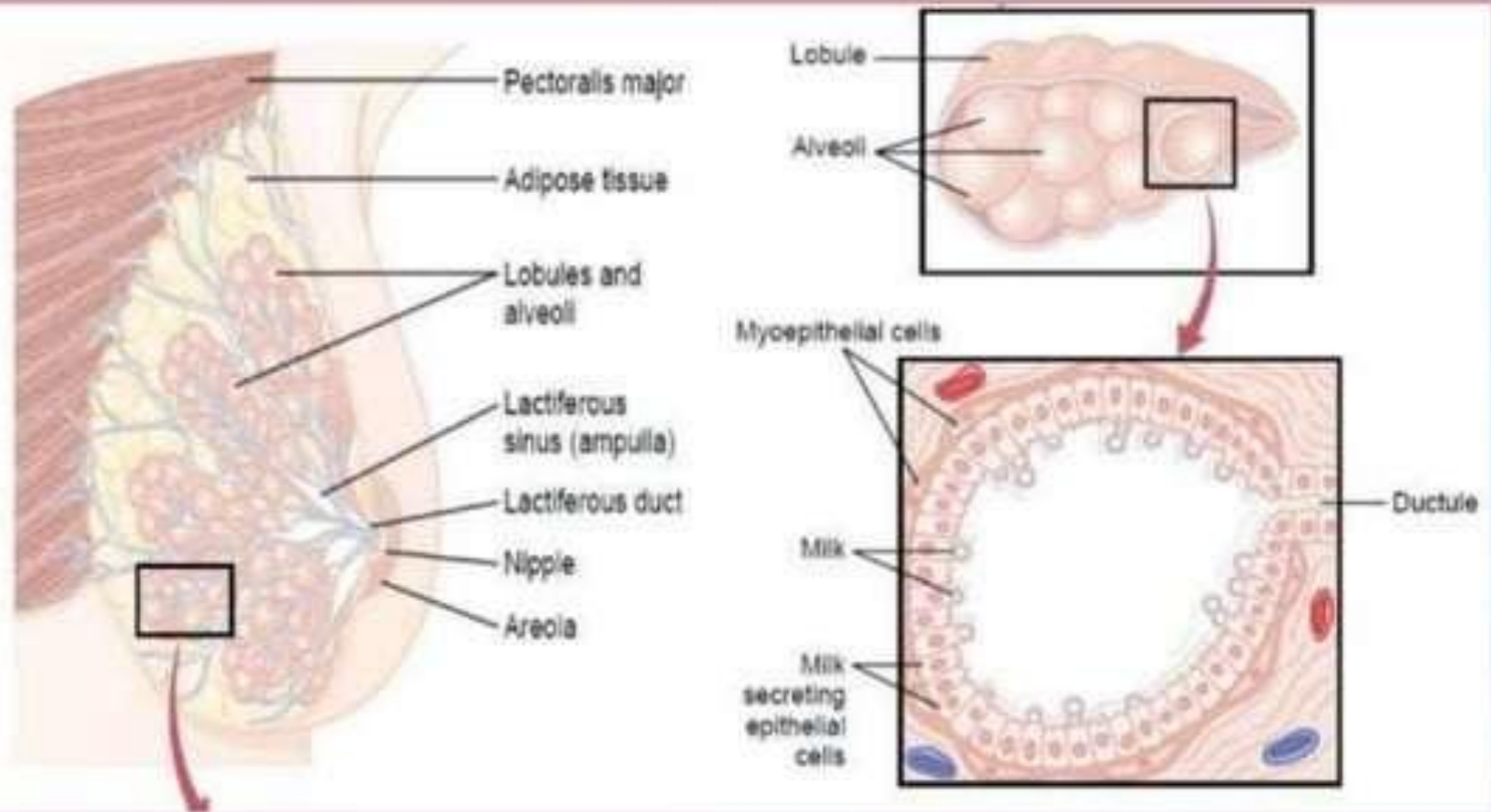
Physiology of Lactation

The physiological basis of lactation is divided into four phases :-

1. Preparation of breasts (**Mammogenesis**).
2. Synthesis and secretion from the breast alveoli (**lactogenesis**).
3. Ejection of milk (**galactokinesis**).
4. Maintenance of lactation (**galactopoiesis**).



Mammogenesis



Phase I - Mammogenesis

Hormones Involved in Mammary Growth

Estrogens

Progesterone

GH

Placental lactogens (PL)

Prolactin

Glucocorticoids

GH and PL induce alveolar growth

Steroids without GH and PL do not exert any effect



Lactogenesis:-



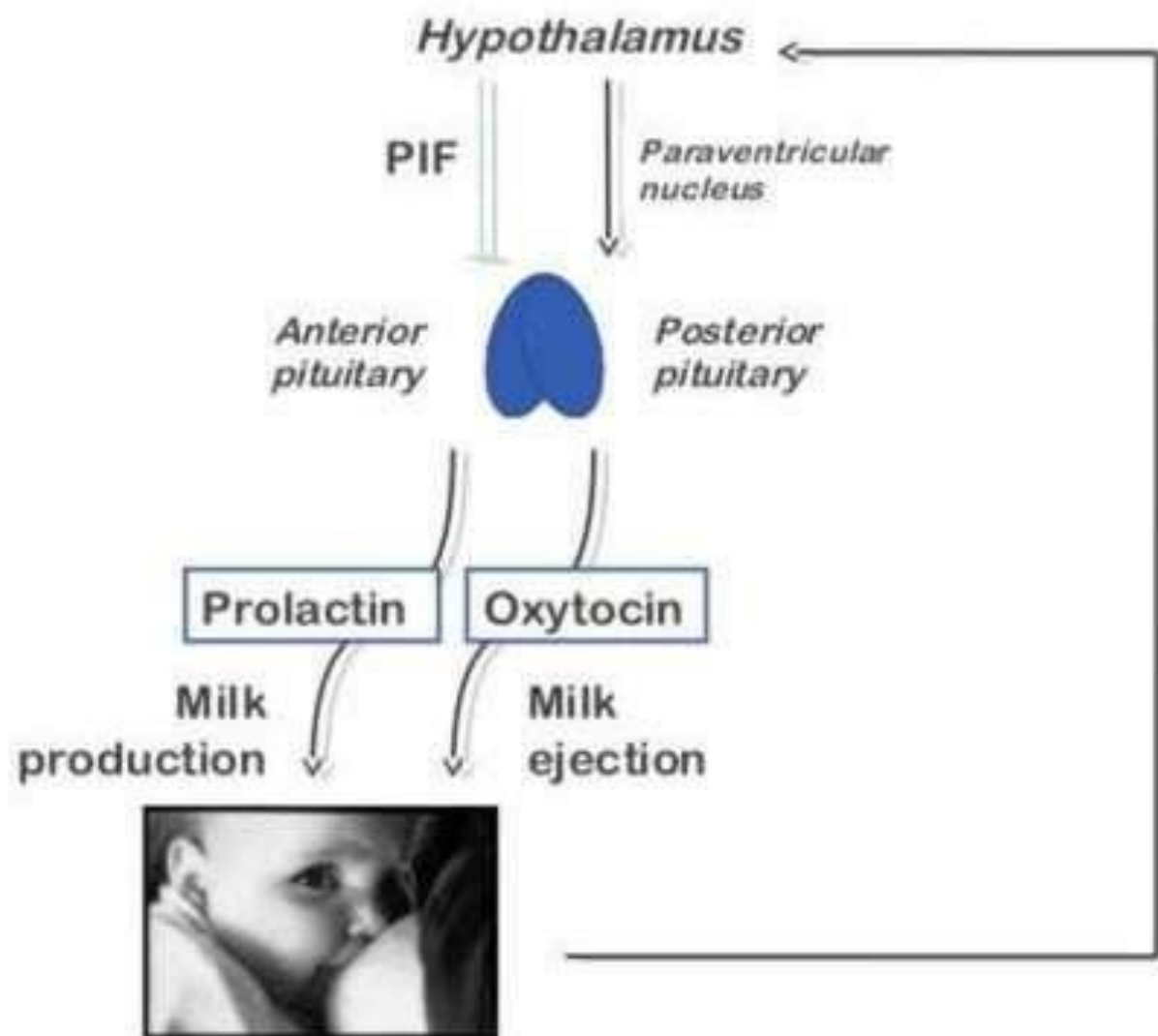
1. Begins when estrogen and progesterone are withdrawn following delivery,
2. Prolactin begins its milk secretory activity
3. The secretory activity is enhanced growth hormone, thyroxine, glucocorticoids and insulin.
4. Milk secretion actually starts on 3rd or 4th postpartum day

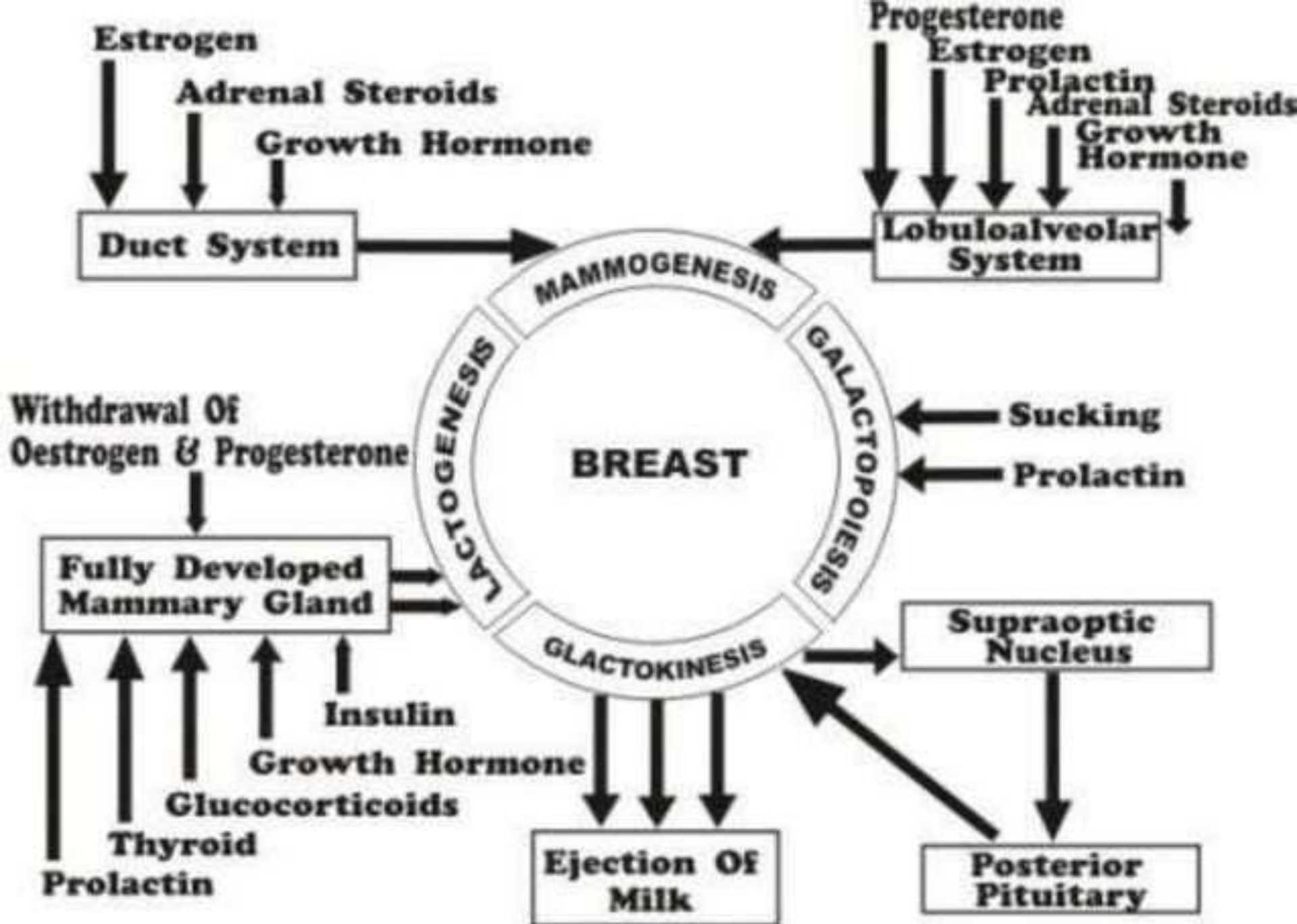
Galactokinesis/Milk let down reflex



- ❑ Discharge of milk from the mammary glands depends not only on the suction exerted by the baby during sucking but also on the contractive mechanism which expresses the milk from the alveoli into the ducts.

How Does Lactation Happen?





Endocrine Glands In Relation To Lactation

Galactopoiesis



- ❑ Prolactin appears to be the single most important galactopoietic hormone. For maintenance of effective and continuous lactation, suckling is essential.

Milk production



- A healthy mother may produce about 500-800 ml of milk a day to feed her infant with about 500 kcal /day

Reflexes in the baby

Rooting reflex



- ❑ The rooting reflex
- ❑ The suckling reflex
- ❑ The swallowing reflex



Factor Which Lessen Milk Production:-

- ❑ Bottles feeds -even one or two feeds.
- ❑ Making the baby wait for feeds.
- ❑ Giving feeds like sugar water, honey, formula feeds or at anytime.
- ❑ Certain medications for mothers like oral contraceptives or methargine.
- ❑ Painful breast conditions like sore or cracked nipples, congested breast & breast engorgement.

Drugs to improve milk production:-



- ❑ Metoclopramide (10 mg thrice daily) increases the blood volume by increasing prolactin level. Intranasal oxytocin contracts myoepithelial cells and causes milk let down

The Varying Composition of Breastmilk

- ❑ **Colostrum**
- ❑ **Transitional milk**
- ❑ **Mature milk**
- ❑ **Preterm milk.**
- ❑ **Fore milk**
- ❑ **Hind milk**

Colostrum

- **Colostrum** is the milk secreted during the first three days after delivery. It is yellow & thick & contains more antibodies & cells & high amounts of vitamins A, D, E & K.

Initiation of breastfeeding

- ❑ Breast feeding should be started within half an hour of birth as soon as possible after normal delivery where as in case of caesarian section delivery, within 4 hours. Rooming in and bedding should be done with mother and baby to prevent separation and promote breast feeding.

Technique of Breastfeeding:-

❑ Positioning:-

- ❑ Baby's head & body straight.
- ❑ Baby's body turned towards the mother, nose opposite the nipple.
- ❑ Baby's body touching mother's abdomen.
- ❑ Baby's whole body well supported not just neck or shoulders.
- ❑ Mother should then support her breast with her finger flat against her chest wall under her breast.



Football hold position



Cradle hold position



Cross cradle hold position



Side lying position



Twin Football Hold



Good Attachment

- ❑ Baby's mouth wide open.
- ❑ Baby's lower lip averted.
- ❑ Upper areola more visible than the lower.
- ❑ Baby's chin touching the breast.

A close-up photograph of an infant's head and mouth latched onto a breast. The infant's mouth is wide open, covering the areola. The lips are flanged out, creating a seal. The tongue is visible, resting against the roof of the mouth. The breast is positioned to the left of the infant's head.

Correct Latch-on

Mouth covers
areola

Lips are
flanged out

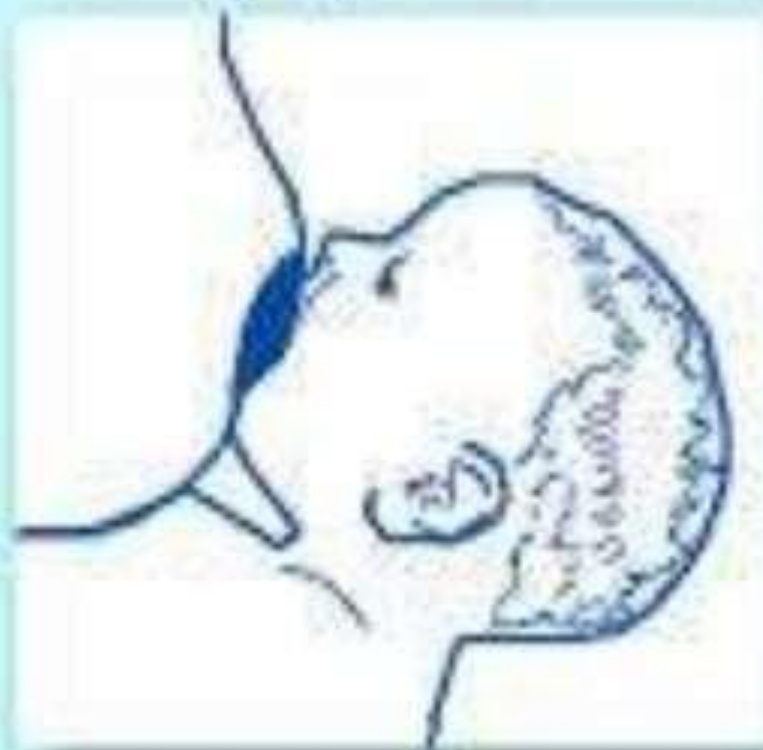
Correct Infant Latch-on Position

Effective suckling



- Baby's cheeks are full & not hollow.
- Baby suckles pauses & suckles in regular deep sucks.

True position



False position



Principles of breast feeding:-

- ❑ Breast feeding should be done in as clean and safe as manner as possible.
- ❑ The mother and baby should be comfortable and relaxed at feeding time.
- ❑ Breast feeding should be initiated within the first half hour after birth.
- ❑ Colostrum is most suitable food for the baby during the first few days after birth because it contains a high concentration of nutrients and anti-infective substances

- ❑ The intervals between feeds vary between 1-4 hours.
- ❑ Starting from the initial 5 mins of feeding, the time can be gradually increased to 15 to 20 minutes in the subsequent days
- ❑ Burping should be done after the feeding in order to kick out the swallowed air.
- ❑ The baby should be allowed to suckle from both the breasts during each feeding.
- ❑ It is desirable to feed the baby on demand it helps baby to gain weight.
- ❑ The mother should be instructed to feed the child even when the child is ill.

Contraindication of breast feeding:-

□ In Mother

1. Chronic disease such as active TB, leprosy, AIDS etc.
2. Mothers addicted to alcohol or heavy doses of some drugs.
3. Psychosis
4. Local condition like breast abscess, cracked nipples

The mother should give adequate attention to her diet, personal hygiene and health and should have sufficient rest.

Contraindication.....

❑ In infant:-

- ❑ Gross prematurity of baby or other conditions in which the newborn cannot suckle.
- ❑ Inborn errors such as phenylketonuria, lactose intolerance.

Problems in breastfeeding

Inverted Nipple



Not related to malignancy



Due to underlying breast malignancy

<http://cancercenter.allina.org>

- **Treatment** is started after birth of the baby.
- The nipple is manually stretched & rolled out several times a day.
- A pump or a plastic syringe is used to draw out the nipple & the baby is then put to the breast.

Sore nipple



- ❑ Correct positioning & latching of the baby to the breast.
- ❑ Hind milk should be applied to the nipple after a feed.
- ❑ The nipple should be aired & allowed to heal in between feeds
- ❑ If the baby has oral thrush, treat it and apply the same medicine on mother's nipple.
- ❑ If sucking is impossible for a day or two express the milk and feed the baby from cup.

Breast engorgement



- **Treatment:-**consists of local warm water packs, & analgesics to the mother to relieve the pain.
- Allow the baby to suckle as far as possible. If the baby cannot get hold of an engorged breast, help the mother to express milk. Milk should be gently expressed to soften the breast to make the mother comfortable& then the mother must be helped to correctly latch the baby to the breast. Hand expression is preferable.

Breast abscess, Blocked duct, Mastitis

- ❑ **Treatment:-**
- ❑ Mother must be treated with milk expression, analgesics and antibiotics.
- ❑ The abscess may have to be incised and drained.
- ❑ Breastfeeding must be continued from the other breast.
- ❑ If sucking is painful, help her to express her milk every 3 hours.
- ❑ Warm compression help to relieve pain.
- ❑ If mother develops fever, chills, body ache, she may need a full course of antibiotics



Others

Menstruation and pregnancy:-

Mother can feed during menstruation and half way through pregnancy. If she is eating well, breast feeding can continue throughout the pregnancy.

Maternal illness:-

Most maternal illness does not require discontinuation of breastfeeding. It is recommended with mastitis, Breast abscess, UTI, TB, hepatitis, typhoid, leprosy.

Human milk bank

□ A human milk bank is a service which collects, screens, processes, and dispenses by prescription human milk donated by nursing mothers who are not biologically related to the recipient infant.

□ Donor's requirement:-

1. Be healthy
2. Be in the process of lactation
3. Undertake a chest x-ray
4. Have a negative VDRL
5. No evidence of Hepatitis

Storage of milk

- ❑ Milk can be stored at in the freezer at 20°C at home.
- ❑ Milk is stored at room temperature upto 10 hours.
- ❑ Milk can be stored at -4°C upto 8 days.



COLOSTRUM



FOREMILK



HINDMILK

Research study

- According to some authorities, increasing evidence suggests that early skin-to-skin contact (also called kangaroo care) between mother and baby stimulates breastfeeding behaviour in the baby. Newborns who are immediately placed on their mother's skin have a natural instinct to latch on to the breast and start nursing. According to studies cited by UNICEF, babies naturally follow a process which leads to a first breastfeed.

Cont..

- Initially after birth the baby cries with its first breaths. Shortly after, it relaxes and makes small movements of the arms, shoulders and head. The baby crawls towards the breast and begins to feed. After feeding, it is normal for a baby to remain latched to the breast while resting. This is sometimes mistaken for lack of appetite.