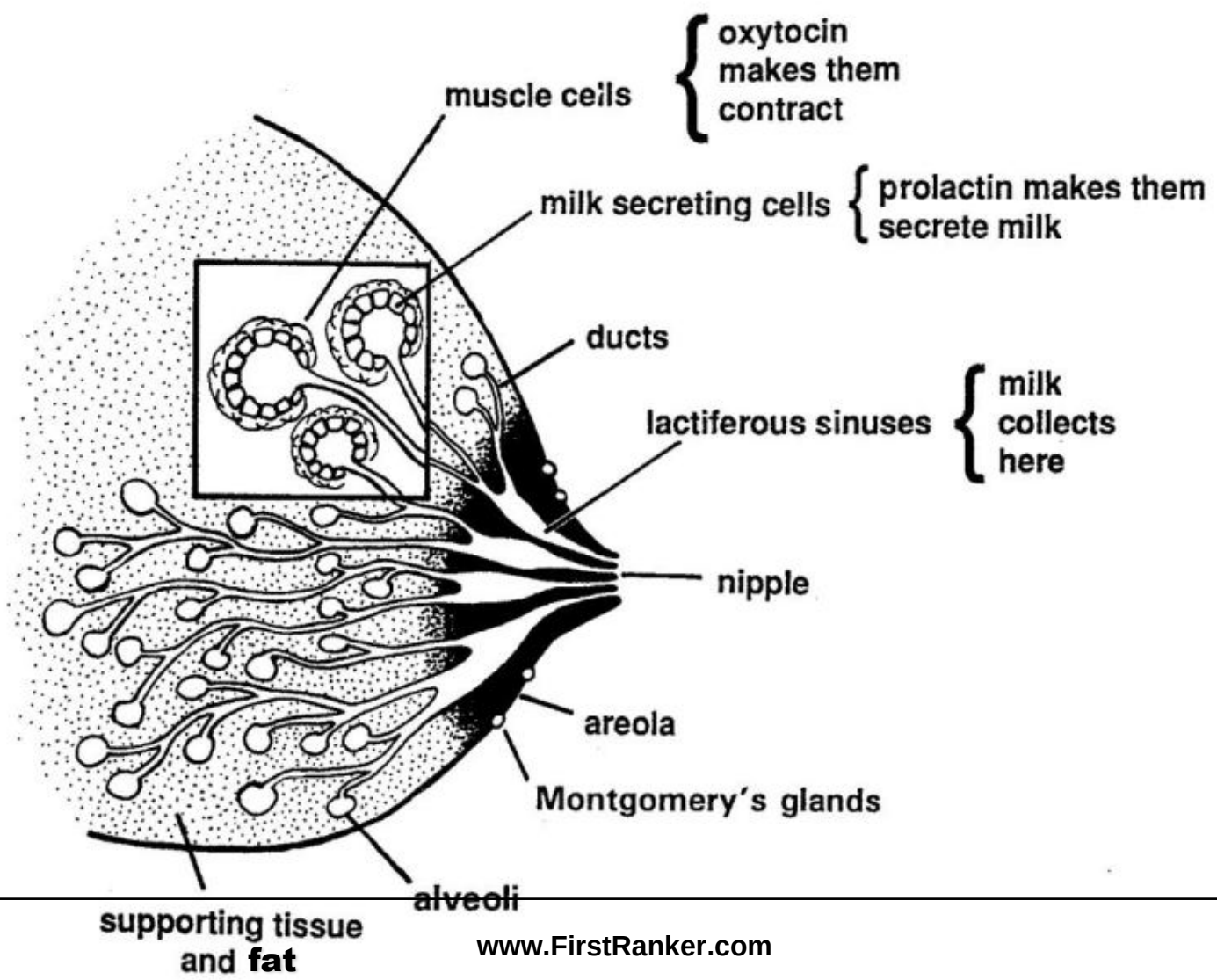
Introduction

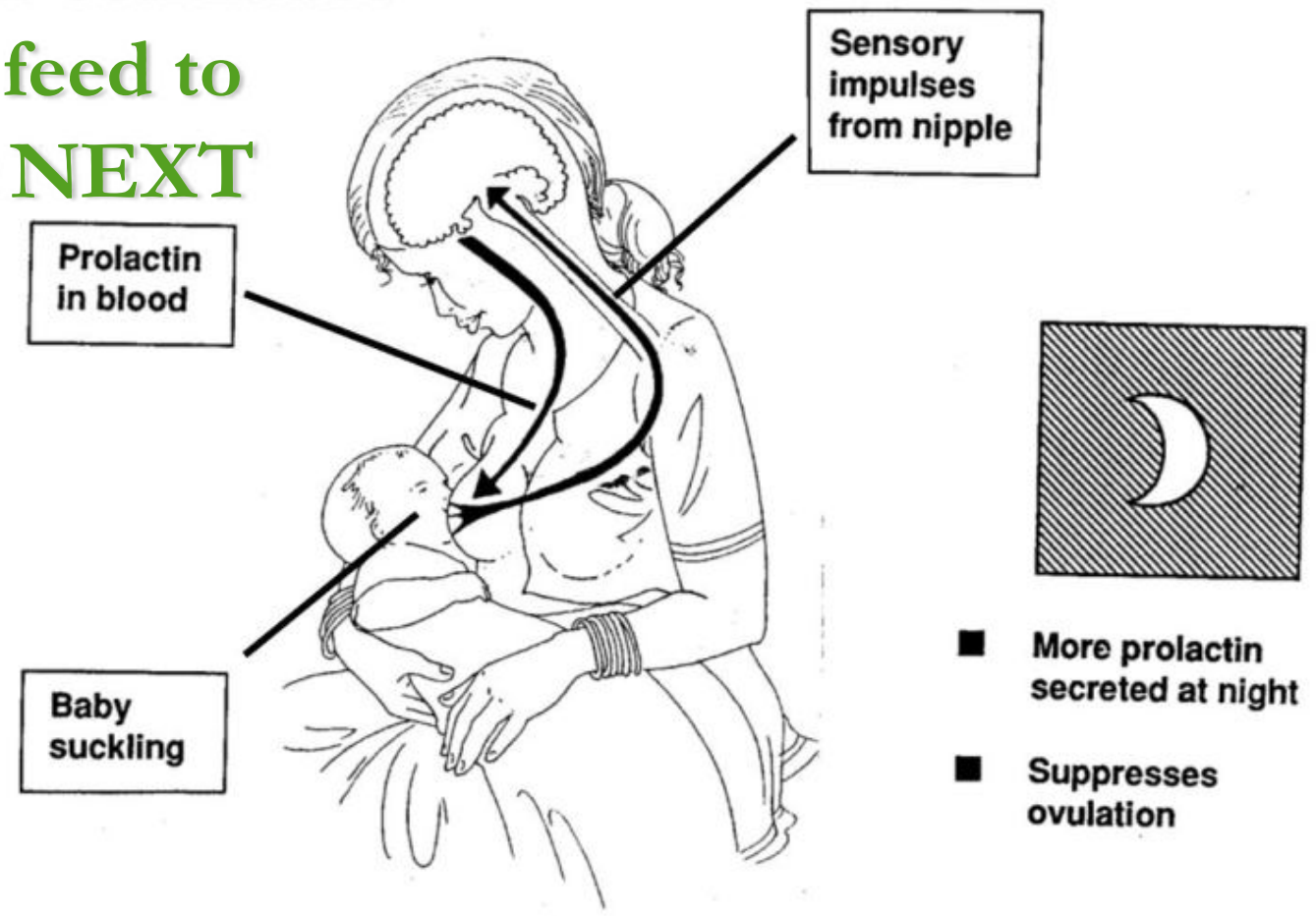
- Breastfeeding is the optimal source of nutrition. The Human Milk is species specific and it provides all the essential nutrients necessary for the growth and development of the newborn infant.

Breast Anatomy - Structure



Prolactin Reflex

Secretion continues AFTER feed to produce NEXT feed



To increase milk productions

Pituitary releases prolactin and oxytocin.

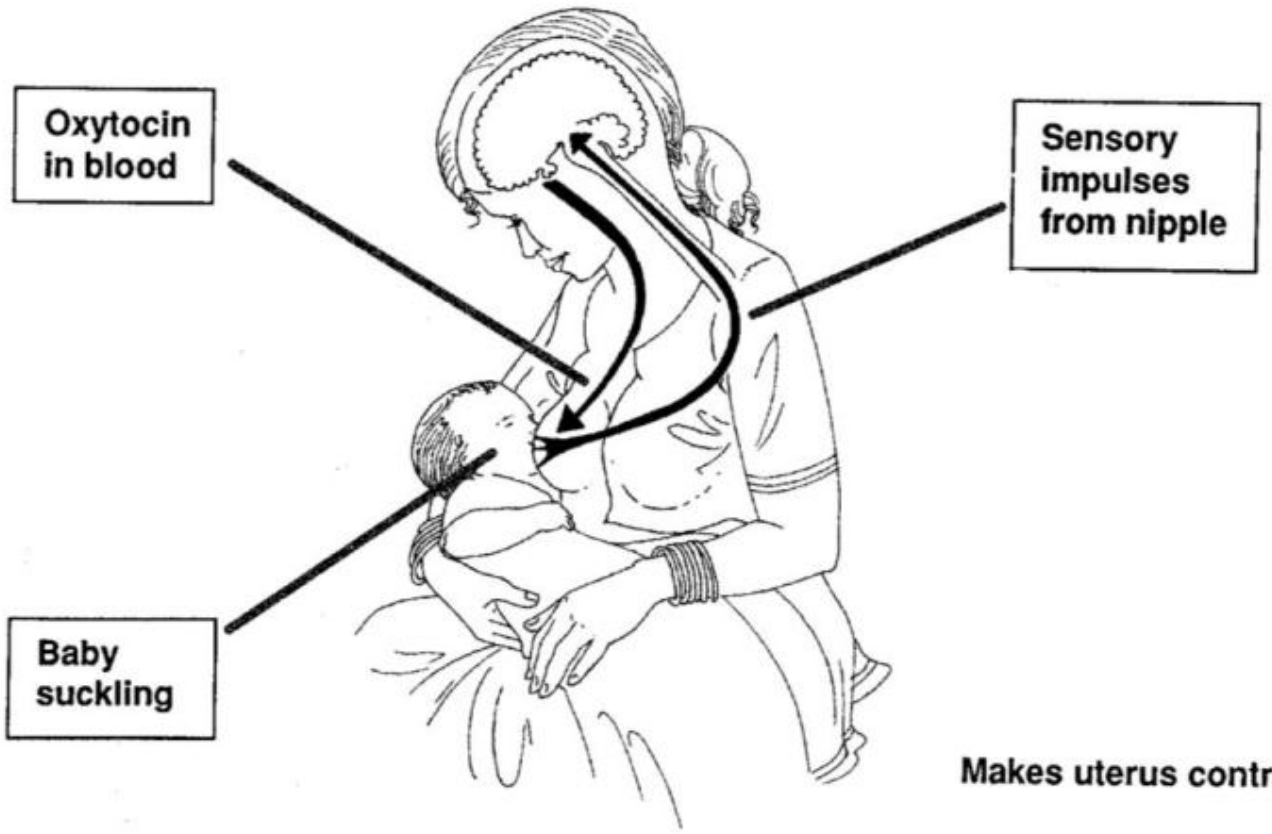
Hormones travel via bloodstream to mammary gland to stimulate milk production and milk ejection reflex (let-down).

Infant suckles at the breast.

Stimulation of nerve endings in mother's nipple/areola sends signal to mother's hypothalamus/ pituitary.

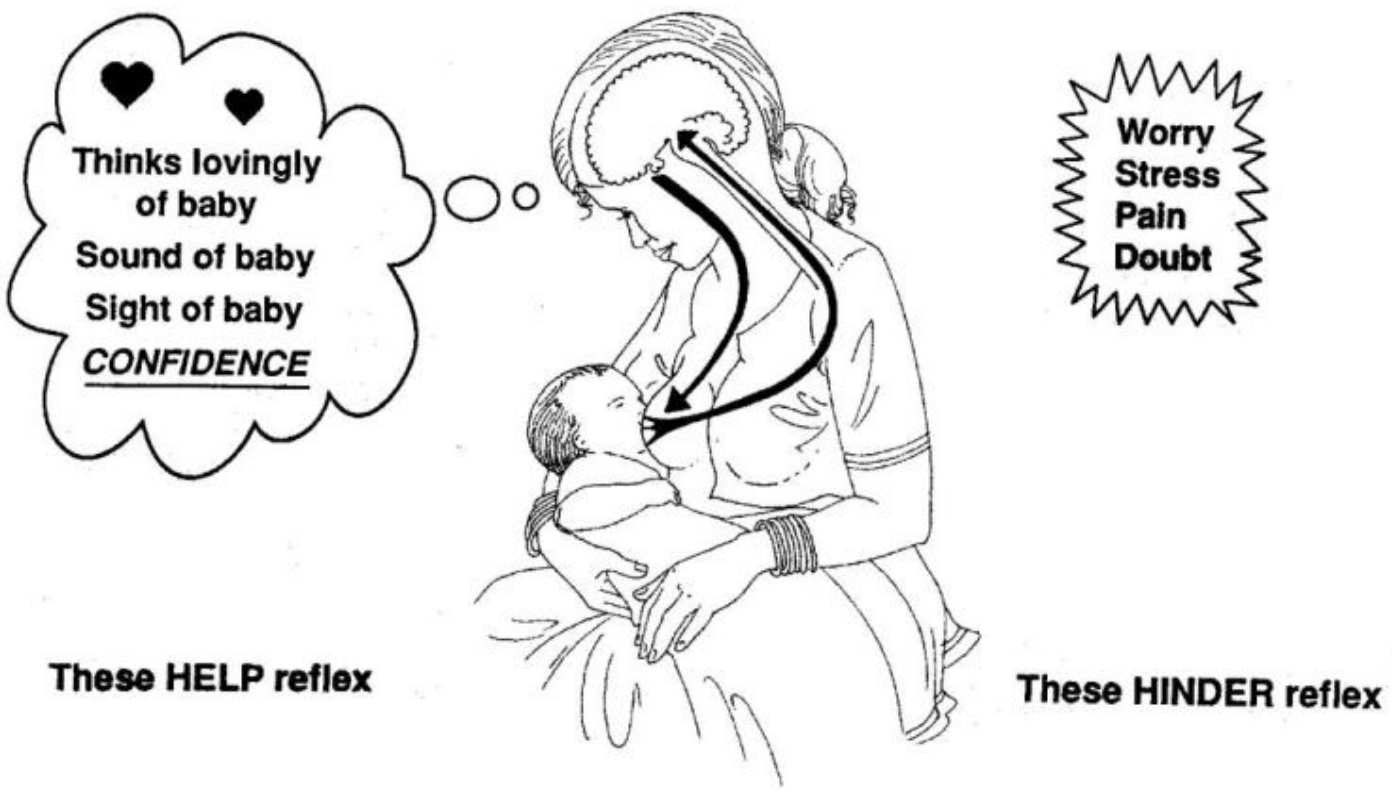
Oxytocin Reflex

Works BEFORE or DURING feed to make milk FLOW



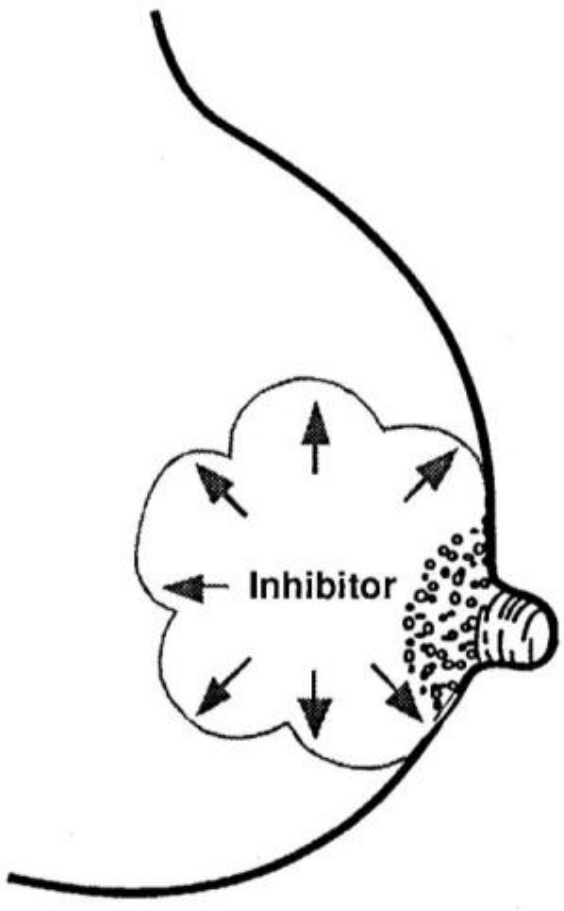
For milk ejection

Helping and Hindering the Oxytocin Reflex



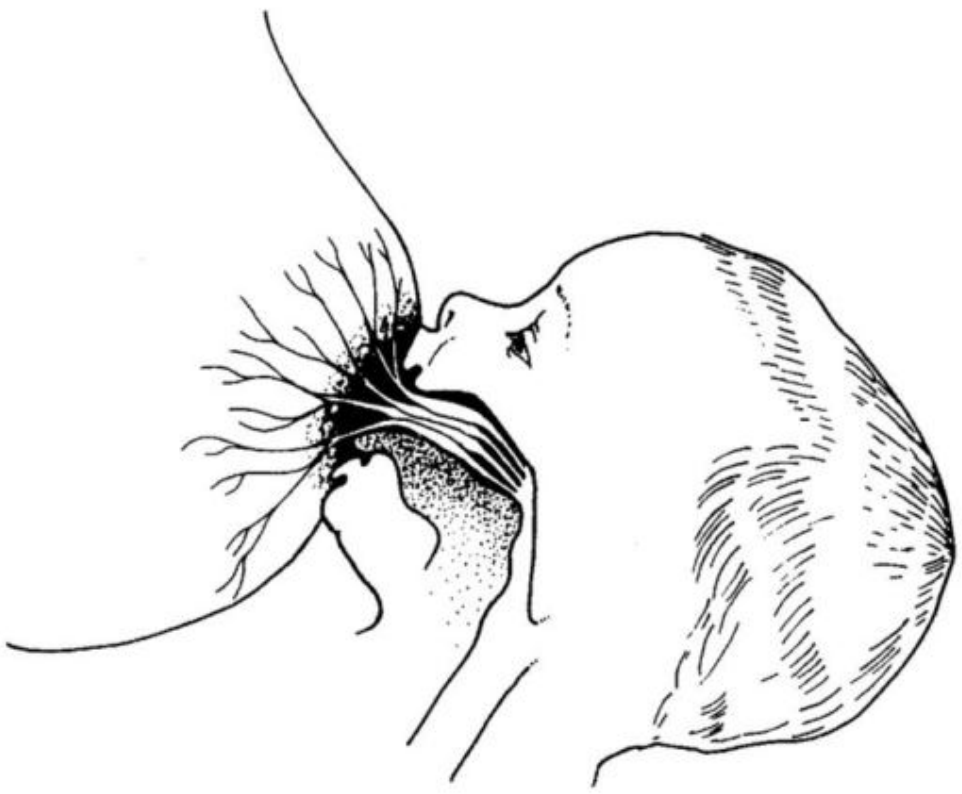
For milk ejection

Inhibitor in Breastmilk

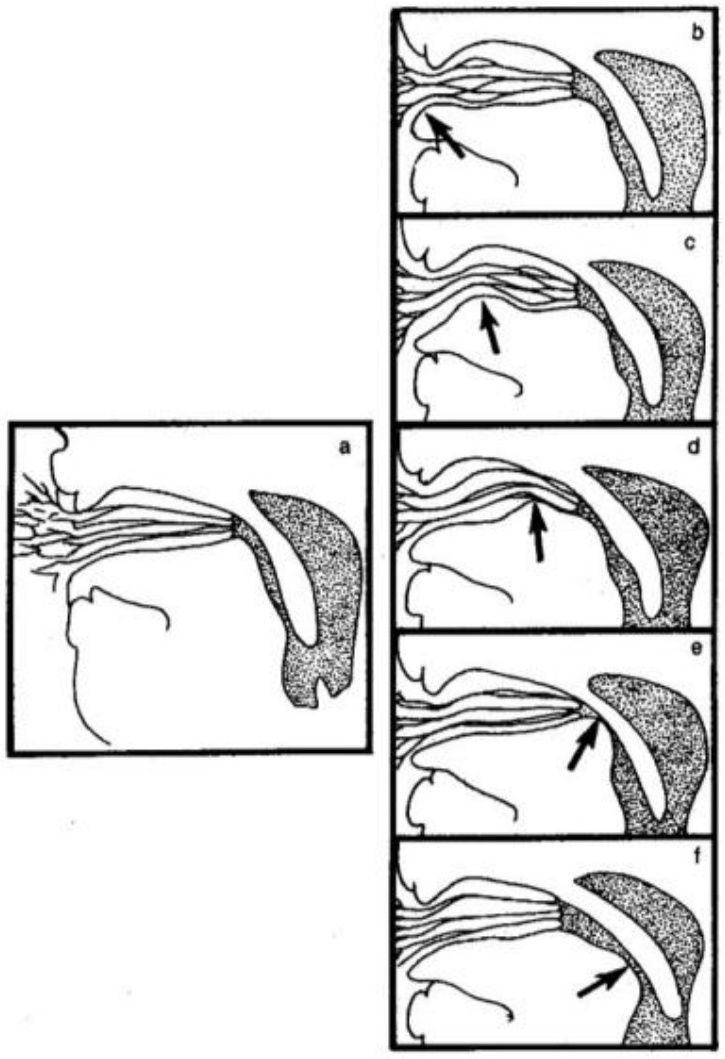


- If breast remains full of milk, secretion stops

Attachment at Breast

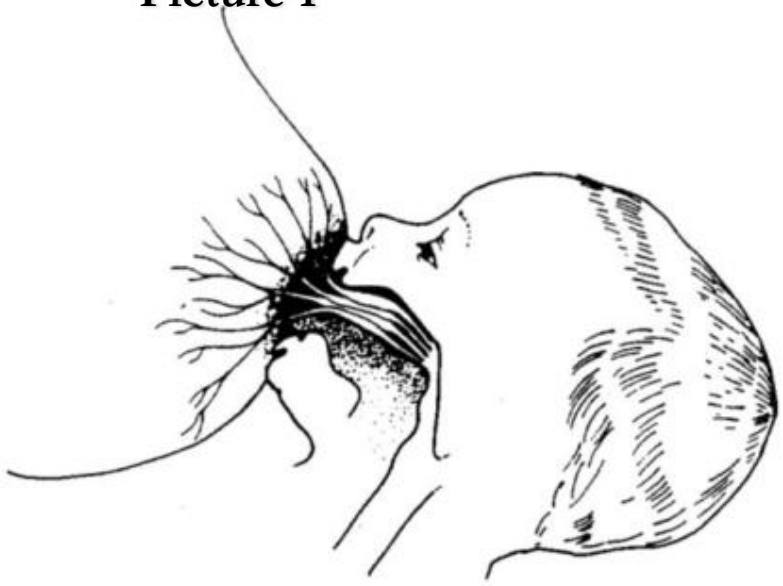


Mechanism of 'Suckling Cycle'

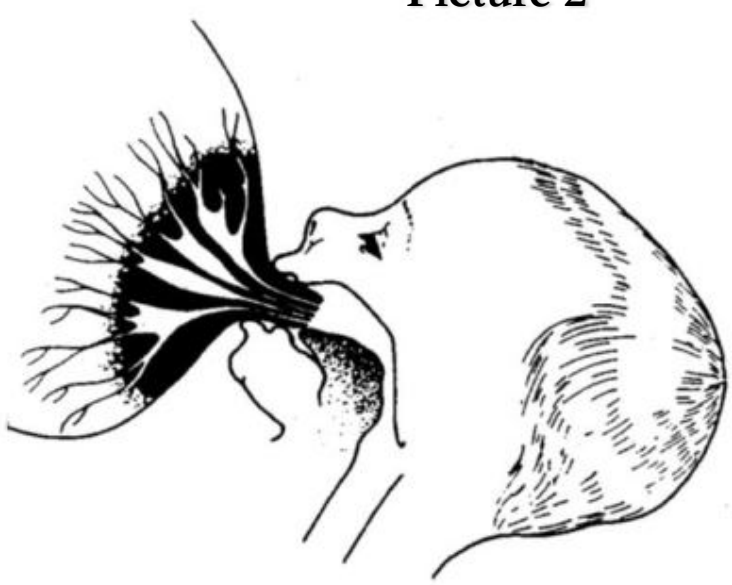


What Differences Do You See?

Picture 1



Picture 2

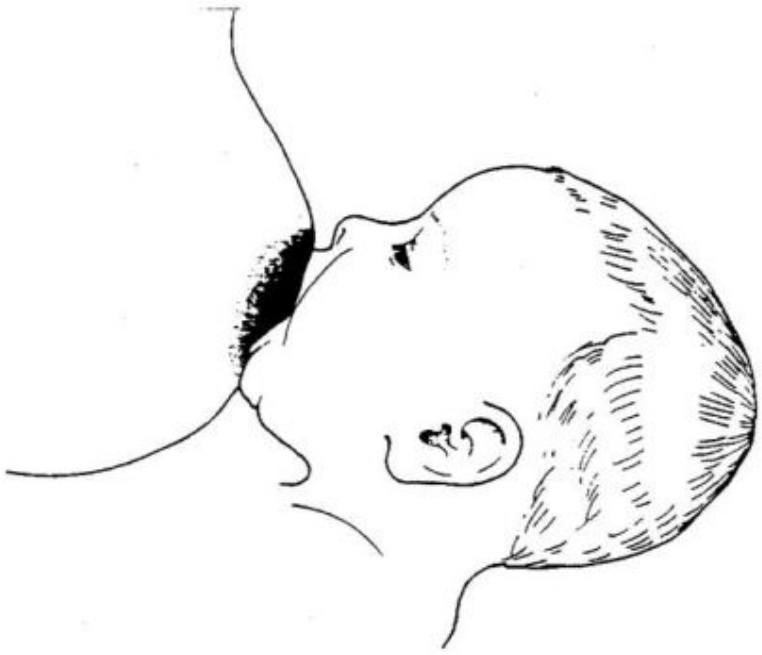


GOOD ATTACHMENT

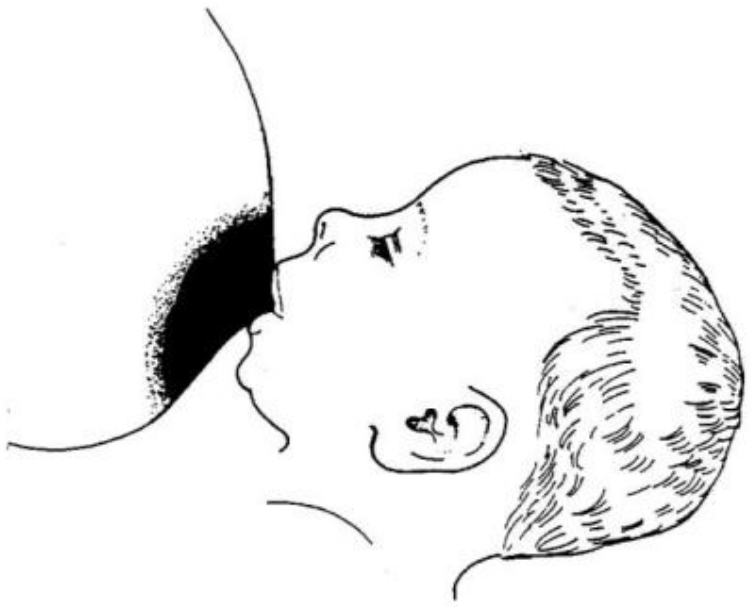
POOR ATTACHMENT

What Differences Do You See?

Picture 1



Picture 2



ATTACHMENT, OUTSIDE APPEARENCE

Consequences of Poor Attachment

- Pain and damage to nipples → Sore nipples, Fissures
- Breast milk not removed effectively → Engorgement

Apparent poor milk supply →
- Baby unsatisfied, wants to feed a lot
- Baby frustrated, refuses to suckle

Breasts make less milk →
- Baby fails to gain weight

Causes of Poor Attachment

Use of feeding bottle	• before breastfeeding established • for later supplements
Inexperienced mother	• first baby • previous bottle feeder
Functional difficulty	• small or weak baby • nipple poorly protractile • engorgement • late start
Lack of skilled support	• less traditional help and community support • doctors, midwives, nurses not trained to help

Feeding Reflexes

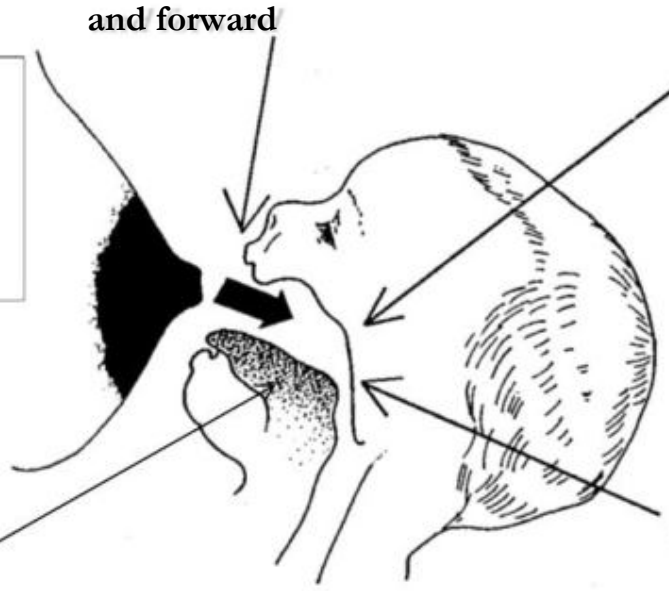
Skill
Mother learns to position baby
Baby learns to take breast

Rooting reflex

When something touches lips, baby opens mouth puts tongue down and forward

Sucking reflex

When something touches palate baby sucks



Gag reflex

When something touches anterior part of the tongue, baby pushes it out.

Swallowing reflex

When mouth fills with milk, baby swallows

Types and Composition of Human Breast Milk

- Types of Breast Milk:
  - Colostrum or Early Milk
  - Transitional Milk
  - Mature Milk

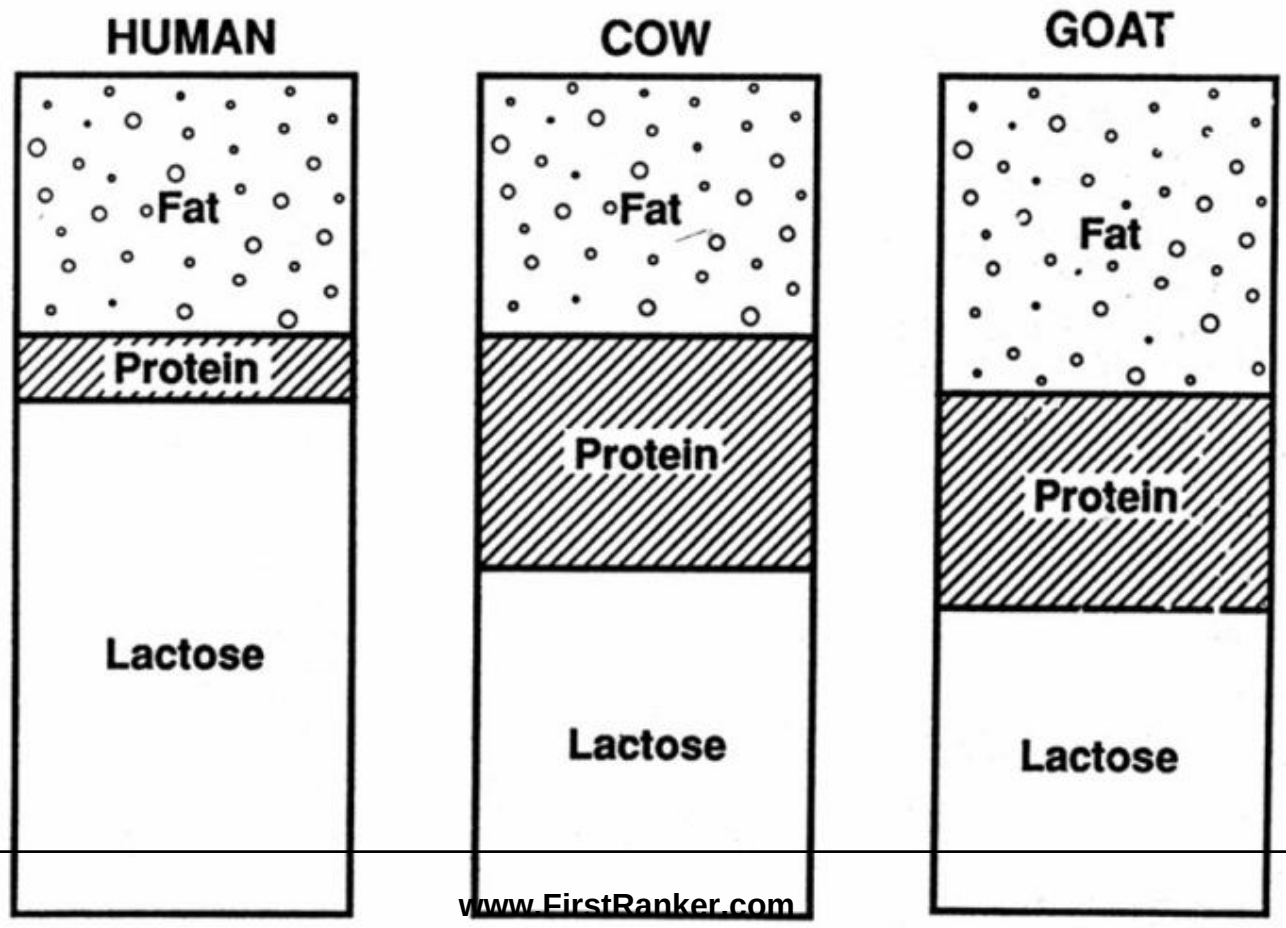
- Colostrum or Early Milk is produced in the late stage of pregnancy till 4 days after delivery; and is rich in antibodies.

- Transitional Milk produced from day 4 – 10 is lower in protein in comparison to Colostrum.

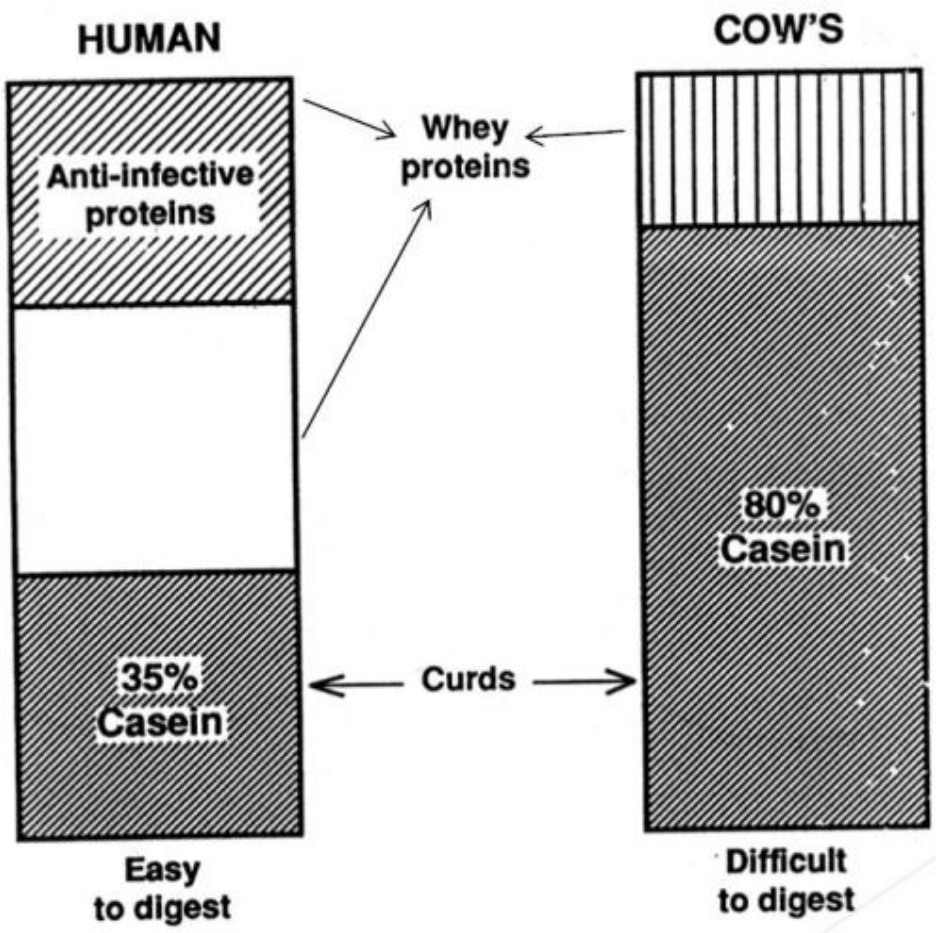
- Mature milk is produced from approximately ten days after delivery up until the termination of the breastfeeding.

Nutrients in Human & Animal Milk

What are the differences between these milks?

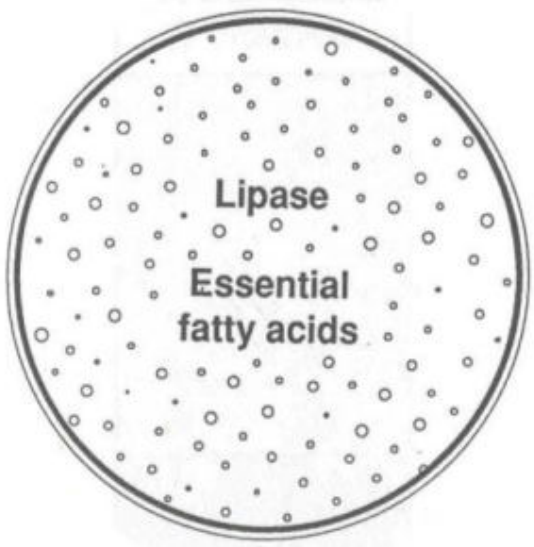


Differences in the Quality of the Proteins in Different Milks



Differences in the Fats of Different Milks

HUMAN

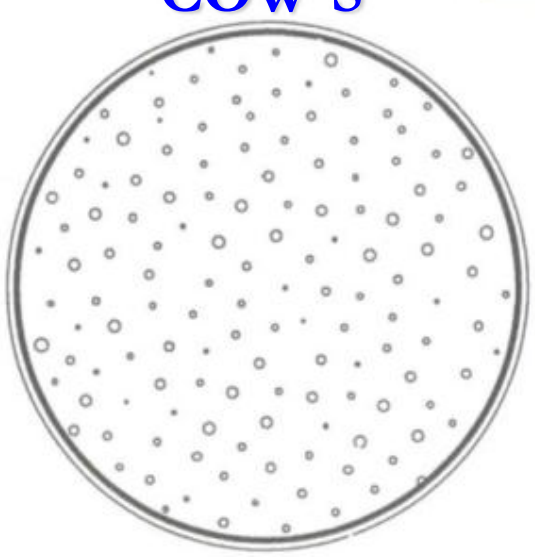


Contains

Essential Fatty Acids,

Enzyme Lipase

COW`S



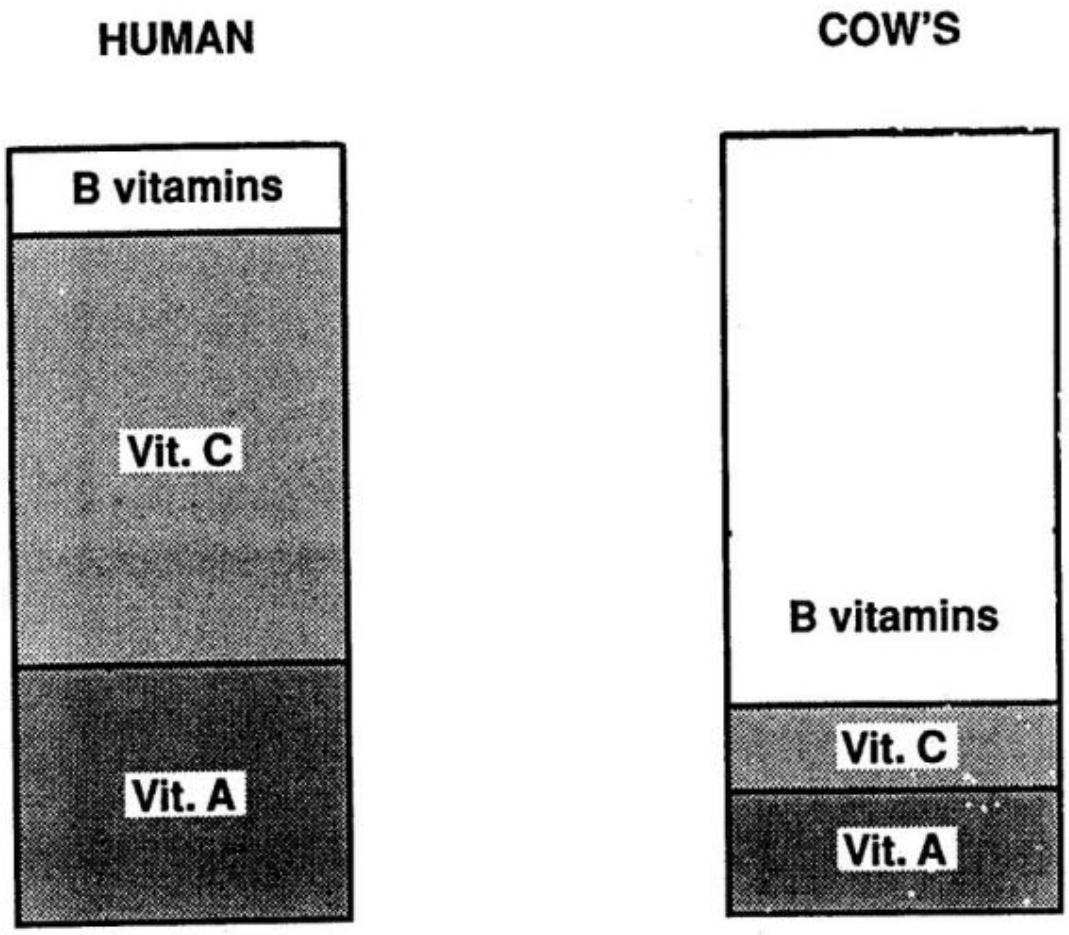
Contains

No Essential Fatty Acids

No Enzyme Lipase

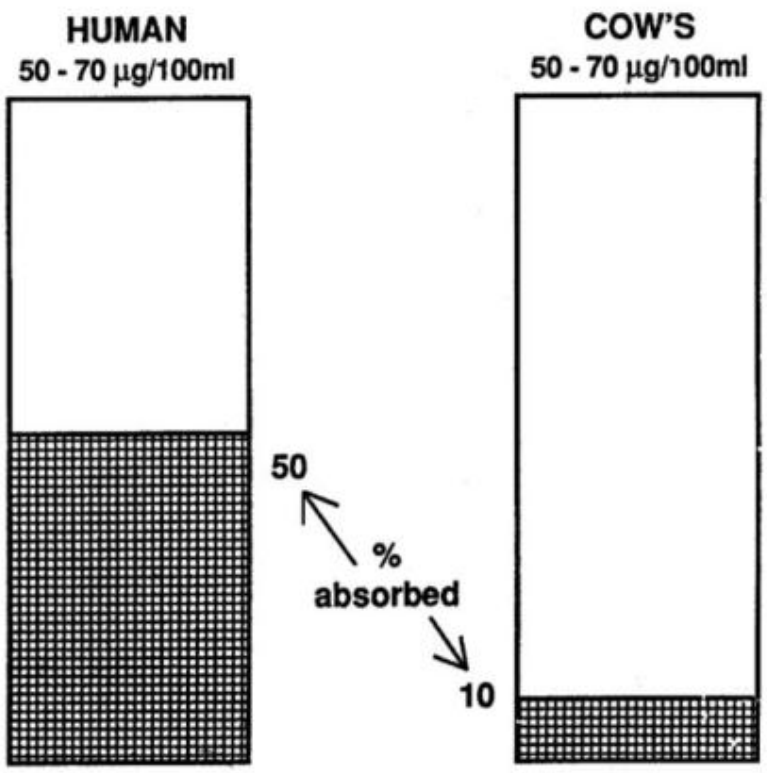
Vitamins in Different Milks

1/7



Iron in Milk

1/8



Types and Composition of Human Breast Milk (Cont'd)

- **Fat** - The main lipids found in human milk are the triglycerides phospholipids and essential fatty acids.
- **Protein** – Whey ; lactoferrin, lysozymes, immunoglobulin A , lactalbumin, Casein; lower concentration in human milk.
- **Carbohydrate** – Include lactose and oligosaccharides.
- **Leukocytes -** Include neutrophils, marcrophages , lymphocytes.
- **Non protein nitrogen** – urea, uric acid
- **Other constituents** : steroid hormones, peptides, insulins, growth factors, minerals, vitamins, lipase.

Mechanism of Protection Against Infection

When Mother infected

White cells in mother's body make antibodies to protect her

These antibodies are secreted in breastmilk to protect baby

Some white cells go to her breast and make antibodies there

Storage of Breast Milk

- Human milk can be stored at room temperature for 4 hours.
- Expressed milk can be stored in refrigerator for 24hours.
- Breast milk can be stored in the freezer at -20^{0}C for about 3 months

Achieving Optimal Breastfeeding

- Activities, attitudes and procedures during the delivery and post partum period have an impact on breastfeeding
- There is well documented evidence soon after delivery starting breast feeding provides skin to skin contact between infant and mother, helps to maintain the body temperatures, reduce risk of hypoglycemia, enhance oxytocin release and beneficial nutrition with intake of colostrum
- Skin to skin contact should occur for about 1-2 hours after delivery. Procedures after delivery like weighing, administration of vitamin K, eye prophylaxis and other procedures should be delayed

Achieving Optimal Breastfeeding (Cont'd)

- Breastfeeding should be started and fully established before discharge from the hospital
- Physicians and health care professionals should observe at least one feeding and ensure this is done properly and breast milk is produced
- Lactation specialist should also work with parents that are having difficulty with breast feeding.
- Early follow up after leaving the hospital is required.

Signs of Effective Breastfeeding

- Frequent feedings 8-12 times daily.
- Intermittent episodes of rhythmic sucking with audible swallows should be heard while the infant is nursing.
- Infant should have about 6-8 wet diapers in a 24 hour period once breast feeding is established.
- Infant should have minimum of 3-4 bowel movements every 24 hours.
- Stools should be about one tablespoon or larger and should be soft and yellow after day 3.
- Average daily weight gain of 15 -30g.
- Infant has regained birth weight by day 10 of life.

Good Breastfeeding Techniques

- The baby should be properly positioned to achieve effective latching
- The mother should wear comfortable apparel, with the breast well exposed for the infant to be able to latch.
- The infant's mouth, chin and umbilicus should be lined up with the head in a neutral position.
- The infant is brought to the breast, with the nose touching or close to the breast.
- The gum line should overlap the areola, and the nipple straight back into the mouth.
- The tongue moves forward beyond the lower gum, cupped and forming a reservoir.
- Milk is removed for the lactiferous sinuses, the jaw moves down creating a negative pressure gradient that helped transfer milk to the pharynx.

Breastfeeding Positions

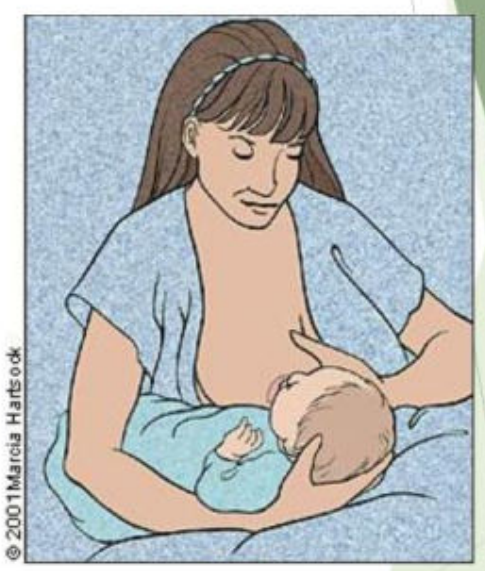
Cradle Hold

- This is the most common position used by mothers.
- Infant's head is supported in the elbow, the back and buttock is supported by the arm and lifted to the breast.

Breastfeeding Positions

Football Hold Position

- The infant's is placed under the arm, like holding a football
- Baby's body is supported with the forearm and the head is supported with the hand.
- Many mothers are not comfortable with this position
- Good position after operative procedures



Breastfeeding Positions

Side Lying Position

- The mother lies on her side propping up her head and shoulder with pillows.
- The infant is also lying down facing the mother.
- Good position after Caesarean section.
- Allows the new mother some rest.
- Most mothers are scared of crushing the baby.

Breastfeeding Positions

Cross Cradle Hold Position

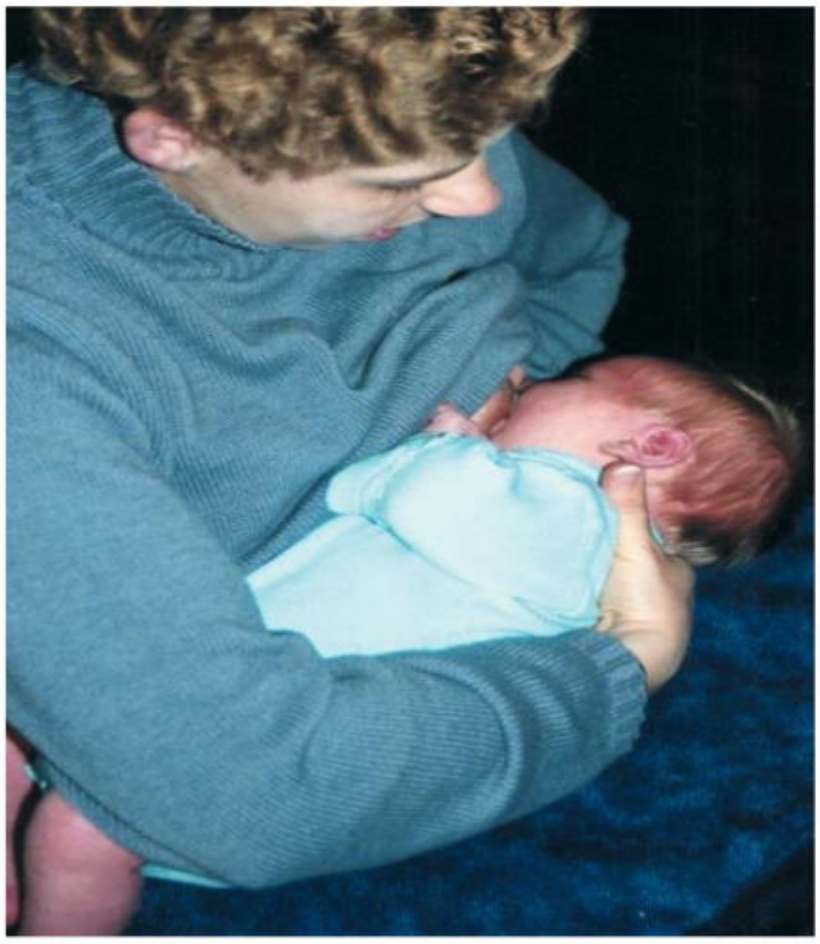
- Ideal for early breastfeeding.
- Mother holds the baby crosswise in the crook of the arm opposite the breast the infant is to be fed.
- The baby's trunk and head are supported with the forearm and palm.
- The other hand is placed beneath the breast in a U-shaped to guide the baby's mouth to your breast.

Breastfeeding Positions

Australian Hold Position

- This is also called the saddle hold
- Usually used for older infants
- Not commonly used by mothers.
- Best used in older infants with runny nose, ear infection.

Can You Identify the positions??



Benefits of Breastfeeding to Infants

- Helps in Gastrointestinal development and function
- Helps in development of the immune system
- Helps in cognitive development of the infant
- Infants who are breastfed have reduced risk of infection compared to formula fed infants.

Benefits of Breastfeeding to Infants

- Breastfed infants have reduced risk of obesity later in life compared to formula fed infants.
- Reduced risk of sudden infant death syndrome, Hodgkin's lymphoma, Leukemia and non insulin dependent Diabetes.
- Lower risk of infections e.g. otitis media, Lower respiratory tract infection, Diarrheal diseases, Allergies , eczema, Meningitis and inflammatory bowel diseases.

Benefits of Breastfeeding to Mothers

- Enhance early maternal – infant bond.
- Aids involution of the uterus.
- Long term breastfeeding helps in loss of the excess weight acquired during pregnancy.
- Prolonged Breastfeeding prolongs anovulation.
- Documented long term effect of breastfeeding include reduced risk of breast, ovarian and endometrial cancers.

Socio-economic Benefits of Breastfeeding

- Income savings
- Reduced risk of infections and diseases hence reduced hospital visits and attendant medical cost.
- Mothers are more economically productive since they will spend less time caring for a sick child.

Advantages of Breastfeeding (contd.)

Mother

- Reduces post delivery bleeding and anemia
- Delays next pregnancy
- Protects breast and ovarian cancer
- Protects obesity and shapes body
- Convenient

Family

- Low cost involved
- Less illnesses
- Family bonding

Society

- Eco-friendly
- Human resource development
- Economy development

Barriers To Effective Breastfeeding

- Lack of confidence in mother
- Belief that breast milk is not sufficient
- Lack of adequate support system
- History of previous breast surgery
- Breast engorgement, cracked and sore nipples
- Retractile nipples

Barriers To Effective Breastfeeding

- Embarrassment by mother
- Jealousy by siblings
- Chronic illness in mother; psychosis, Cancer.

Contraindication to Breastfeeding

- **Neonatal conditions-**Inborn error of metabolism; galactosemia, phenylketonuria.
- **Maternal conditions-**
  - Mothers on certain medications ; anticancer therapy, radioactive isotope, antithyroid drugs, MAO inhibitors, lithium, gold salt,ergotamine etc.
  - Psychosis(untreated)

Role of the Nurse

- Provide education about breastfeeding at first prenatal visit
- Physical exam should include breast exam
- Ensure rooming-in after delivery
- Ensure breastfeeding is started and established before discharge after delivery.
- Observe at least a session of breastfeeding to ensure it is done correctly

RECOMMENDATIONS

- Exclusive breast feeding until 6 months of age
- Introduce complimentary foods with continued breastfeeding
- Optimum to breastfeed for 2 years or longer

HARMFUL EFFECTS OF FORMULA MILK

Why some mothers choose formula vs. breast milk

- Distressed by physical discomfort of early breastfeeding problems.
- Convenience issues
- Pressures of employment/school
- Worries that breast shape will change
- Formula manufacturers manipulate people through ads
- Doctors and nurses need more lactation training

www.hasslefreeclipart.com/. ../baby_crying.gif

Why some mothers choose formula vs. breast milk

- Moms given very little time to adjust to changes of postpartum
- Family demands
- Non-supportive family/health professionals
- Embarrassment
- Lack of confidence in self
- Feeling that one cannot produce enough milk

www.dreamstime.com/ thumb_27/11304631444pJ47D.jpg

Mother's milk vs. formula milk

- Formula milk for 3 days old babies is no different than formula milk for 3 months old infants.

store.enfamil.com/ media/pr_prosobee_lipil.jpg

- Breast milk is ingeniously different every single day; adapted to the changing needs of the baby.

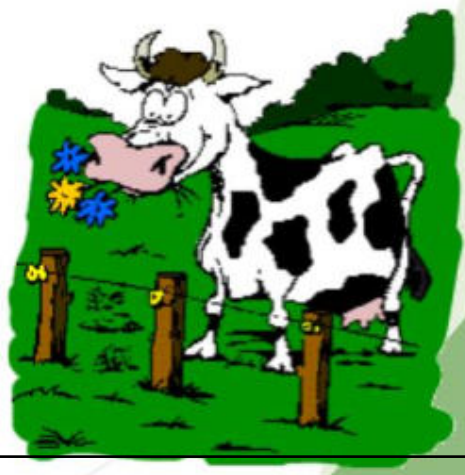
breastfeeding.8k.com/ Resources/breastfeeding.jpeg

Mother's milk vs. formula milk

- Human milk is designed to support the development of large brains, capable of processing and storing lots of information.

www.babymall.com.au/ images/readingroomcartoon.gif

- Cows milk is designed to support functions, like constant grazing.



myxo.css.msu.edu/danimal/ quiz/cow_picture.png

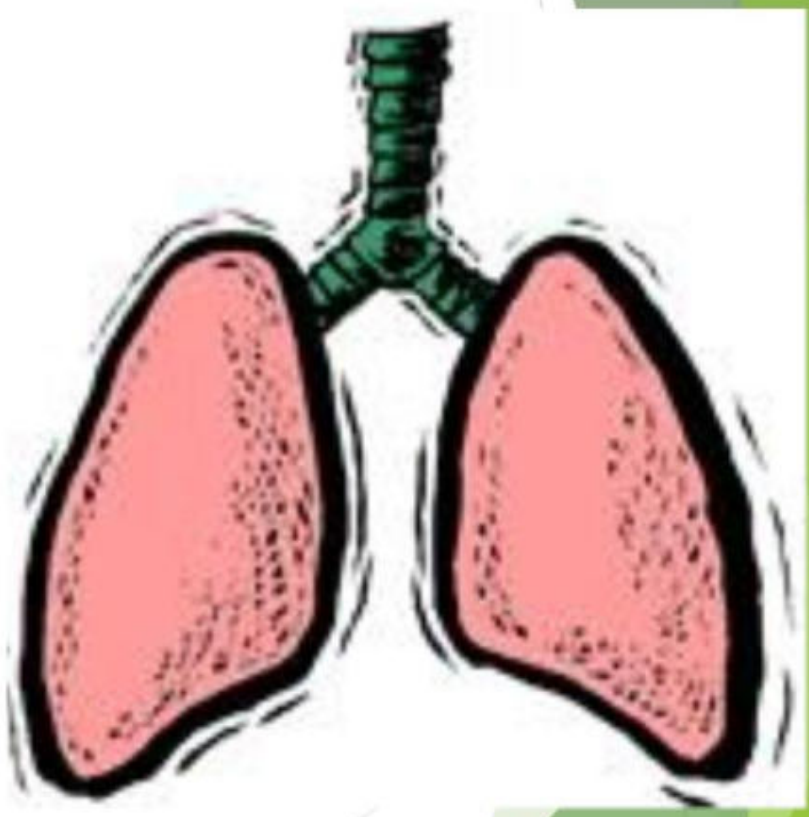
Illness Relative risk

- Allergies, eczema 2 to 7 times
- Urinary tract infections 2.6 to 5.5 times
- Inflammatory bowel disease 1.5 to 1.9 times
- Diabetes2.4 times
- Gastroenteritis 14 times
- Hodgkin's lymphoma 1.8 to 6.7 times
- Otitis media 2.4 times
- *Haemophilus influenzae* meningitis 3.8 times
- Necrotizing enterocolitis 6 to 10 times

www.geocities.com/.../ Canopy/4116/stalk.gif

Illness Relative risk

- Pneumonia/lower respiratory tract infection 4 times
- Respiratory syncytial virus infection 3.9 times
- Sepsis 2.1 times
- Sudden infant death syndrome 2.0 times
- Industrialized-world hospitalization 3 times



www.mamashealth.com/ images/lungs1.gif

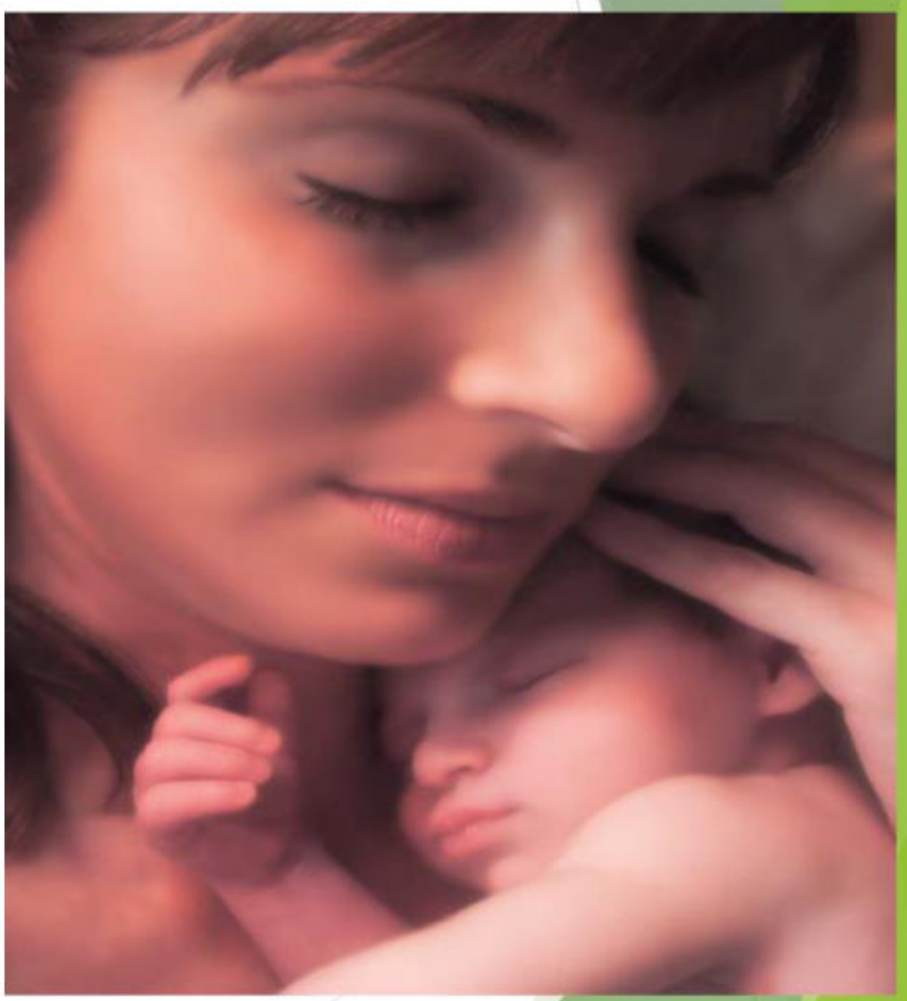
Barriers to Bonding

* A Bottle places a physical barrier between mom and baby

*Less skin to skin contact

*Less eye contact

* The hormonal connection between the breastfeeding mother and baby cannot be experienced by the bottle feeding mother



www.photohome.com/.../ mom-and-baby-1a.jpg

Other Options If Breastfeeding is Not Possible

Mom can still use her milk, even if she decides not to breastfeed:

- Use a breast pump (electric/manual)
- Cup or bowl feeding
- Spoon feeding
- Get milk from donation bank

 graphics.iparenting.com/. ../womanpumping.jpg

There is no freedom of choice for humans
if it has been taken away from them
at the beginning.

Breast-feeding is not a choice,
but an obligation to the choice,

Give your child the freedom of choice.

www.13.waisays.com/ image006.jpg

Kangaroo Mother Care

Kangaroo Mother Care

- Kangaroo Mother Care (KMC) is a special way of caring of low birth weight babies
- It fosters their health and well being by promoting effective thermal control, breastfeeding, infection prevention and bonding
- In KMC, the baby is continuously kept in skin-to-skin contact by the mother and breastfed exclusively to the utmost extent
- KMC is initiated in the hospital and continued at home.

For who?

- Preterm infants
- Low birth weight
- Who need thermal protection
- Adequate feeding
- Frequent observation
- Protection from infection

What are the benefits?

- For Parents

- Promotes attachment, bonding, improves parental confidence, and helps to promote increased milk production and breastfeeding success

- Less stress

- Feeling of fulfillment

For preterm and low birth weights

- They will experience more normalized temperature, heart rate, respiratory rate, increased weight gain, fewer nosocomial infections

- Facilitation of breast feeding

- Fewer apneic episodes

- Improved cognitive development

- Decreased stress levels

- Reduced pain responses

- Normalized growth

- Positive effects on motor development

- For Institutions
  - Reduced hospital stays
- For the community
  - Reduce mortality rate and decreased hospital-associated costs

Components of Kangaroo Mother Care

- Skin to skin contact
- Exclusive breast feeding

Pre-requisite for KMC

- Support to the mother in hospital and at home
- Post discharge follow up

Requirement for KMC implementation

- Training of nurses, physicians and other staff
- Educational material
- If possible, reclining chairs in the nursery and postnatal wards
- Mother can provide KMC sitting on an ordinary chair or in a semi-reclining posture on a bed with the help of pillows

Preparing for KMC

- Arrange a time
- Demonstrate her KMC procedure
- Encourage her to bring her family members

KMC procedure

- The baby should be placed between the mother's breasts in an upright position
- The head should be turned to one side and in a slightly extended position
- This slightly extended head position keeps the airway open and allows eye to eye contact between the mother and her baby.
- The hips should be flexed and abducted in a "frog" position; the arms should also be flexed.
- Baby's abdomen should be at the level of the mother's epigastrium.
- Mother's breathing stimulates the baby, thus reducing the occurrence of apnea.
- Support the baby’s bottom with a sling/binder.

KMC – positioning of the baby

Start kangaroo position as soon as possible after delivery!

Fig. 4a).

Fig.4a Positioning the baby for KMC

Fig.7 Breastfeeding in KMC

What should mother will wear?

The Support Binder

- KMC can be provided using any front-open, light dress as per the local culture

- KMC works well with blouse and sari, gown or shawl.
- A suitable apparel that can retain the baby for extended period of time can be adapted locally
- Baby is dressed with cap, socks, nappy, and front-open sleeveless shirt or 'jhabala'.

Baby's Need/ Clothes

Time of initiation

- KMC can be started as soon as the baby is stable
- Babies with severe illnesses or requiring special treatment should be managed according to the unit protocol
- Short KMC sessions can be initiated during recovery with ongoing medical treatment (IV fluids, oxygen therapy)
- KMC can be provided while the baby is being fed via oro-gastric tube or on oxygen therapy

Duration of KMC

- Skin-to-skin contact should start gradually in the nursery, with a smooth transition from conventional care to continuous KMC
- Sessions that last less than one hour should be avoided because frequent handling may be stressful for the baby.
- The length of skin-to-skin contacts should be gradually increased up to 24 hours a day, interrupted only for changing diapers.
- When the baby does not require intensive care, she should be transferred to the post-natal ward where KMC should be continued.

Criteria to transfer the baby from nursery to the ward

- Stable baby
- Mother confident to look after the baby
- Gaining weight

Discharge criteria

- Baby's general health is good and no evidence of infection
- Feeding well, and receiving exclusively or predominantly breast milk.
- Gaining weight (at least 15-20 gm/kg/day for at least three consecutive days)
- Maintaining body temperature satisfactorily for at least three consecutive days in room temperature.
- The mother and family members are confident to take care of the baby in KMC and should be asked to come for follow-up visits regularly.

When should KMC be discontinued ?

- When the mother and baby are comfortable, KMC is continued for as long as possible, at the institution & then at home
- Often this is desirable until the baby's gestation reaches term or the weight is around 2500 g
- She starts wriggling to show that she is uncomfortable, pulls her limbs out, cries and fusses every time the mother tries to put her back skin to skin.
- This is the time to wean the baby from KMC
- Mothers can provide skin to skin contact occasionally after giving the baby a bath and during cold nights.

Post discharge follow up

- In general, a baby is followed once or twice a week till 37-40 weeks of gestation or till the bay reaches 2.5-3 kg of weight
- Thereafter, a follow up once in 2-4 weeks may be enough till 3 months of post-conceptional age
- Later the baby should be seen at an interval of 1-2 months during first year of life
- The baby should gain adequate weight (15-20 gm/kg/day up to 40 weeks of post-conceptional age and 10 gm/kg/ day subsequently)

- National Kangaroo Care Awareness Day has been celebrated worldwide on May 11 since 2011

Thank You!