

Breastfeeding Promotion Part I

NURNS08: Maternal and child care

By Titaree Pha.

28 April 2020 (2 - 4 pm. Online Teaching and Using Zoom)

Part 1 Breastfeeding Basics

- Anatomy and physiology of Lactation
- Role of culture and families
- Ethical & legal responsibilities of nurses
- Barriers of BF & Cultural variances
- Drug and viruses in breast milk,
Breastfeeding during COVID-19 pandemic



WHO and
UNICEF
recommend

Contents

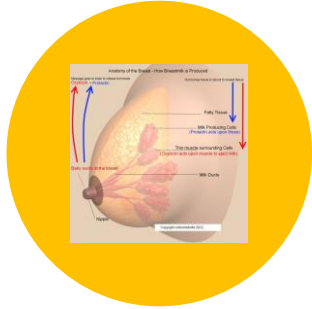
WHO and UNICEF recommend that children initiate breastfeeding within the first hour of birth

Advantages of breastfeeding for the mother and the baby

Anatomy and breastmilk production

Roles of Nurses in Promoting Exclusive Breastfeeding

Learning outcomes



Describe breast anatomy and breastmilk production.



Nurse roles in Breastfeeding promotion.



Identify practices that interfere with successful lactation and breastfeeding



Identify and management of common breastfeeding problems

Learning outcomes



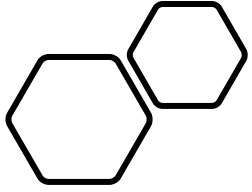
Develop positive attitudes towards breastfeeding as WHO recommended.



Describe the benefits of breast feeding for the infant and mother.



Identify the different kinds of milk.



Introduction

Health care providers play a significant role in protecting, supporting and promoting breastfeeding.



They have close contact with families during pregnancy and the newborn period, providing an ideal opportunity to discuss the benefits of breastfeeding,

Advantages of breastfeeding

- Breast milk provides optimal nutrition for babies. It has the right amount of nutrients, is easily digested, and is readily available.

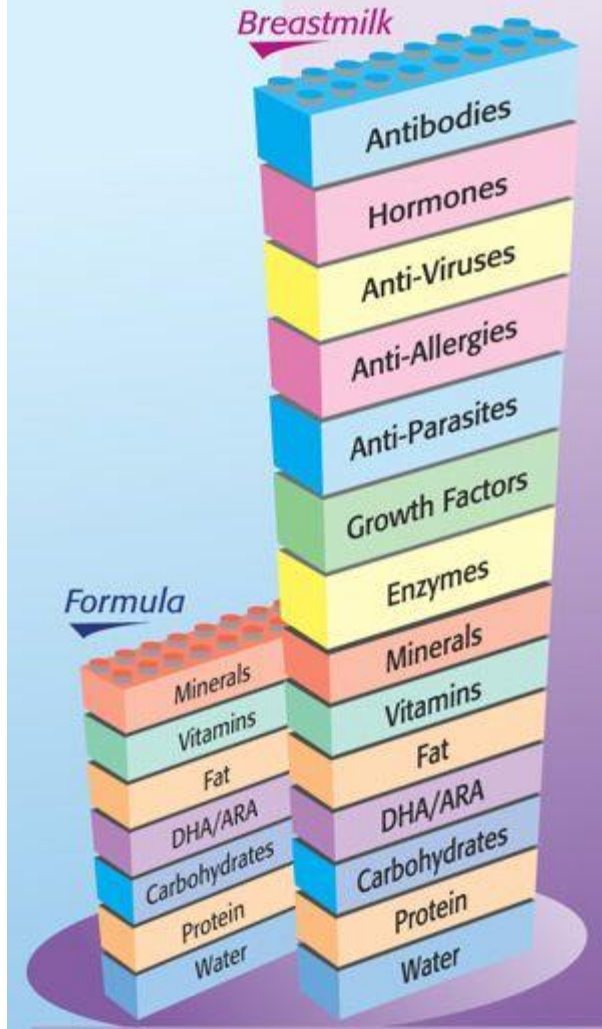
Advantages of breastfeeding

- Breastmilk is the ideal food for infants. It is safe, clean and contains antibodies which help protect against many common childhood illnesses.

Advantages of breastfeeding

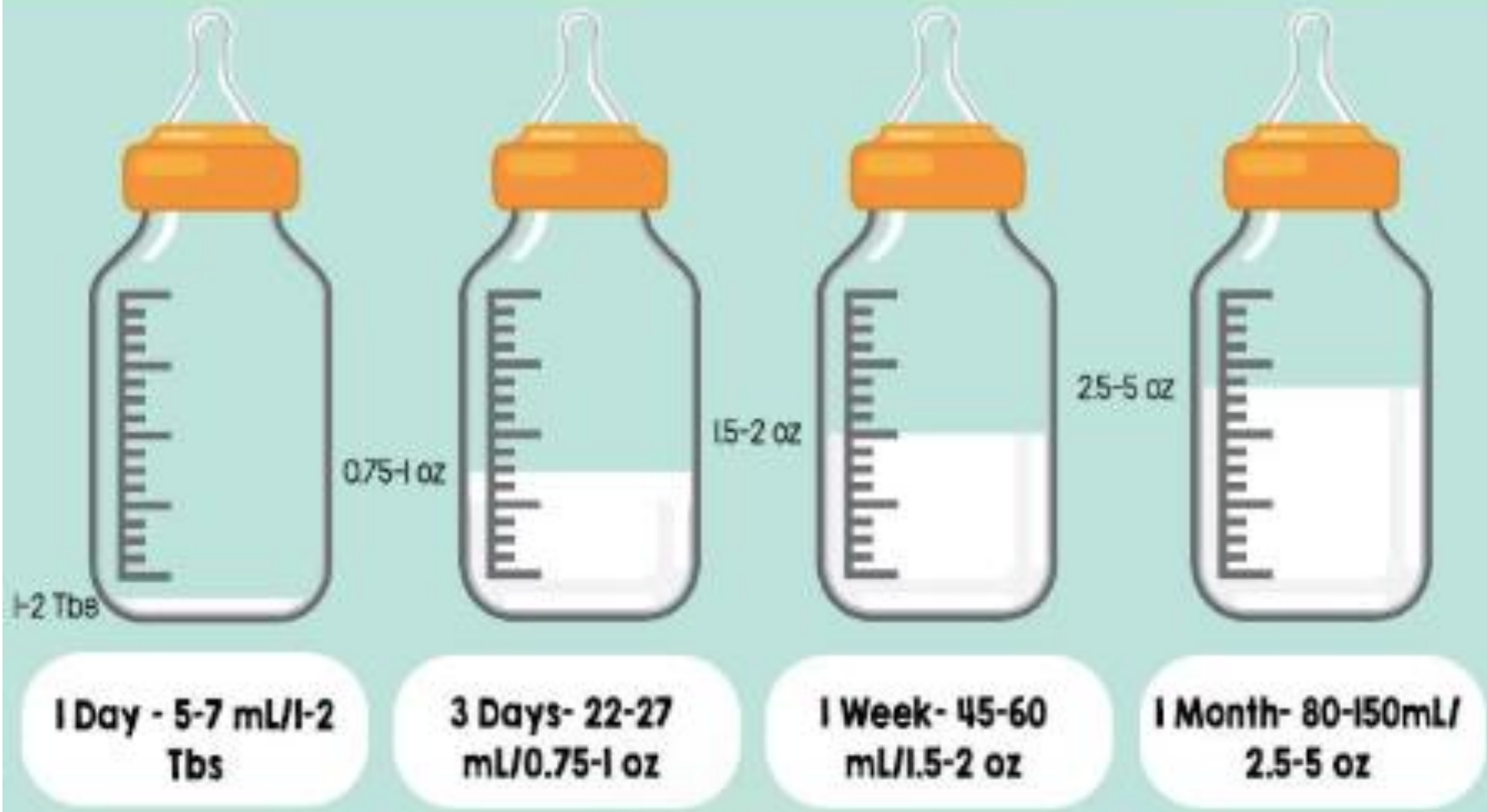
- Breastmilk provides all the energy and nutrients that the infant needs for the first months of life, and it continues to provide up to half or more of a child's nutritional needs during the second half of the first year, and up to one third during the second year of life.

Breastmilk has **more** of the good things babies need



Nutrients & Immune Factors	Raw Breast Milk	Raw Cow's Milk	Pasteurized Cow's Milk	Commercial Infant Formula
Anti-microbial enzymes	Active	Active	Inhibited	Unavailable
Biodiverse probiotics	Active	Active	Destroyed	Added
Essential omega-3 & -6 fatty acids	Active	Active	Damaged	Added
Lactase-producing bacteria	Active	Active	Destroyed	Unavailable
Delicate proteins	Active	Active	Destroyed	Altered
B-12 binding protein	Active	Active	Inactive	Inactive
Bioavailable vitamins	Active	Active	Inhibited	Inhibited
Bioavailable calcium	Active	Active	Inhibited	Inhibited
Bioavailable phosphorus	Active	Active	Inhibited	Inhibited
Phosphatase enzyme	Active	Active	Destroyed	Unavailable
Oligosaccharides	Active	Active	Diminished	Unavailable
Lymphocytes	Active	Active	Inactive	Inactive
B-lymphocytes	Active	Active	Inactive	Inactive
Macrophages	Active	Active	Inactive	Inactive
Neutrophils	Active	Active	Inactive	Inactive
IgA/IgG Antibodies	Active	Active	Inactive	Inactive
Bifidus Factors	Active	Active	Inactive	Inactive
Gamma-interferon	Active	Active	Inactive	Inactive
Fibronectin	Active	Active	Inactive	Inactive

Infant Maximum Stomach Capacity





3 DAYS



5 DAYS



6 DAYS



25 DAYS

	Energy (measured)		Protein (true protein)		Fat		Lactose	
	Preterm	Term	Preterm	Term	Preterm	Term	Preterm	Term
Colostrum	49	54	2.7	2.0	2.2	1.8	5.1	5.6
Mature milk	73	63	1.1	1.0	3.3	3.4	6.2	6.5
Difference	49%	16%	-61%	-52%	50%	93%	21%	16%
p-value	<0.00001*	<0.00001*	<0.00001*	<0.00001*	<0.00001*	<0.00001*	<0.00001*	<0.00001*
	Calcium		Phosphate					
	Preterm	Term	Preterm	Term				
Colostrum	25	26	9.5	11				
Mature milk	29	26	12.8	16				
Difference	13%	-2%	35%	41%				
p-value	0.003	0.62	0.002	0.001				

*met our approximate Bonferroni adjusted p-value criteria for statistical significance was < 0.001.

Colostrum was milk collected in the first 3 days, mature milk was collected between 5 to 12 weeks. The difference values less than 100% reflect lower values for mature milk, differences greater than 100% reflect higher values for colostrum compared to mature milk.

MACRONUTRIENT (PER 100ML)	COLOSTRUM	MATURE MILK
Energy	58 Kcal	58-72 Kcal
Total Protein	2.3 g	0.9 g
IgA	364 mg	142 mg
Casein	140 mg	187 mg
Lactoferrin	330 mg	167 mg
Lactalbumin	218 mg	161 mg
Total Fat	2.9 g	4.2 g
Lactose	5.3 g	7.0 g
Cholesterol	27 mg	16 mg

Vitamin	Goat	Cow	Human
Vitamin A (IU)	185	126	190
Vitamin D (IU)	2.3	2.0	1.4
Thiamine (mg)	0.068	0.045	0.017
Riboflavin (mg)	0.21	0.16	0.02
Niacin (mg)	0.27	0.08	0.17
Pantothenic acid (mg)	0.31	0.32	0.20
Vitamin B6 (mg)	0.046	0.042	0.011
Folic acid (μg)	1.0	5.0	5.5
Biotin (μg)	1.5	2.0	0.4
Vitamin B12 (μg)	0.065	0.357	0.03
Vitamin C (mg)	1.29	0.94	5.00

Source: Park *et al.*, 2007 ^[12]

Breast Milk vs. Formula

Formula or Breast milk? The American Academy of Pediatrics recommends exclusive breast milk for 6 months.

WHY?

*Breastmilk is convenient,
clean and the right temperature.*

FOR BABY: REDUCED RISK OF:

- *Infections: ear, GI & lungs*
- *Asthma, dermatitis and allergies*
- *Obesity, Diabetes, SIDS*
- *Childhood cancer*
- *Baby being stressed*

FOR MOM: REDUCED RISK OF:

- *Ovarian and Breast cancer*
- *Type 2 Diabetes & heart disease*
- *Postpartum depression*
- *Osteoporosis (thin bones)*
- *Helps lose weight by burning 500 calories/day*
- *Saves money and time!*



21 Dangers of Infant Formula

the Infant Formula Companies don't want you to know!

For Your Child: When you feed your baby infant formula, you increase your baby's chance of having:

- 1 asthma
- 2 allergies
- 3 ear infections
- 4 high blood pressure & heart disease
- 5 respiratory infections
- 6 lower IQ & cognitive development
- 7 obesity
- 8 iron-deficiency anemia
- 9 SIDS (Sudden Infant Death Syndrome)
- 10 diabetes (types 1 & 2)
- 11 digestive problems



- 12 childhood cancers
- 13 exposure to environmental contaminants
- 14 sleep apnea
- 15 dental problems & malocclusions

For the Mother: When you don't breastfeed, you increase your own chance of developing:

- 16 diabetes (both gestational as well as type 2)
- 17 overweight & obesity
- 18 osteoporosis
- 19 breast cancer, ovarian cancer & uterine cancer
- 20 hypertensive & cardiovascular diseases
- 21 reduced child spacing

NB: References of the evidence-based research used for this information flyer is on the back
Produced by the World Alliance for Breastfeeding Action (WABA) on its 21st Anniversary • April 2012
Written by Nancy Forrest (RN, BSN, IBCLC), WABA-ILCA Fellow for 2011/2012

	Breast feeding	Formula milk
Advantages	<ul style="list-style-type: none">- has antibodies; no bacteria- foodstuffs in correct proportions- no risk of allergic reaction- correct t°- no additives/ preservatives- builds mother - child bond- no cost; no preparation- breast-feeding triggers reduction of uterus size	<ul style="list-style-type: none">- less painful- other people can feed baby- may contain supplement vitamins, minerals
Disadvantages	<ul style="list-style-type: none">- may be painful- mother needs to be present- damage beauty	<ul style="list-style-type: none">- more likely to develop illness (diarrhoea, urine infection...)- risks of wrong mixture- expensive

World Health Organization (WHO) recommends ...

- The World Health Organization (WHO) recommends breastfeeding until 2 years old or longer Trusted Source because the benefits continue that long.
- These agencies recommend starting as early as one hour after birth for the biggest benefits.

World Health Organization (WHO) recommends ...

- Therefore, it is important for health care providers to acquire breastfeeding knowledge, skills and education to fulfill their responsibility.

Recommendations

- WHO and UNICEF recommend that children initiate breastfeeding within the first hour of birth and be exclusively breastfed for the first 6 months of life – meaning no other foods or liquids are provided, including water.

Recommendations

- Infants should be breastfed on demand – that is as often as the child wants, day and night. No bottles, teats or pacifiers should be used.
- From the age of 6 months, children should begin eating safe and adequate complementary foods while continuing to breastfeed for up to 2 years and beyond.

Promoting baby-friendly hospitals

- To provide support to get breastfeeding off to a successful start.
- As well, healthcare providers can influence health care policies and practices within their organizations.

Breastfeeding is one of the most effective ways to ensure child health and survival. However, nearly 2 out of 3 infants are not exclusively breastfed for the recommended 6 months.



WHO and UNICEF recommend:

- Early initiation of breastfeeding within 1 hour of birth;
- Exclusive breastfeeding for the first 6 months of life; and
- Introduction of nutritionally-adequate and safe complementary (solid) foods at 6 months together with continued breastfeeding up to 2 years of age or beyond.





Breastfeeding

- Exclusive breastfeeding is recommended up to 6 months of age, with continued breastfeeding along with appropriate complementary foods up to two years of age or beyond.

Improved rates of breastfeeding lead to...



Improved health and development for children



Improved health for women



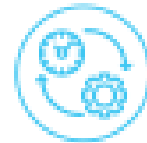
And improved...



Cognitive development



Learning and educational attainment



Productivity



Wages



Economy (GDP)

Is breast milk active or passive immunity?

- **Breast milk** also contains antibodies, which means that babies who are **breastfed** have **passive immunity** for longer.

How long do babies have their mother's immune system?

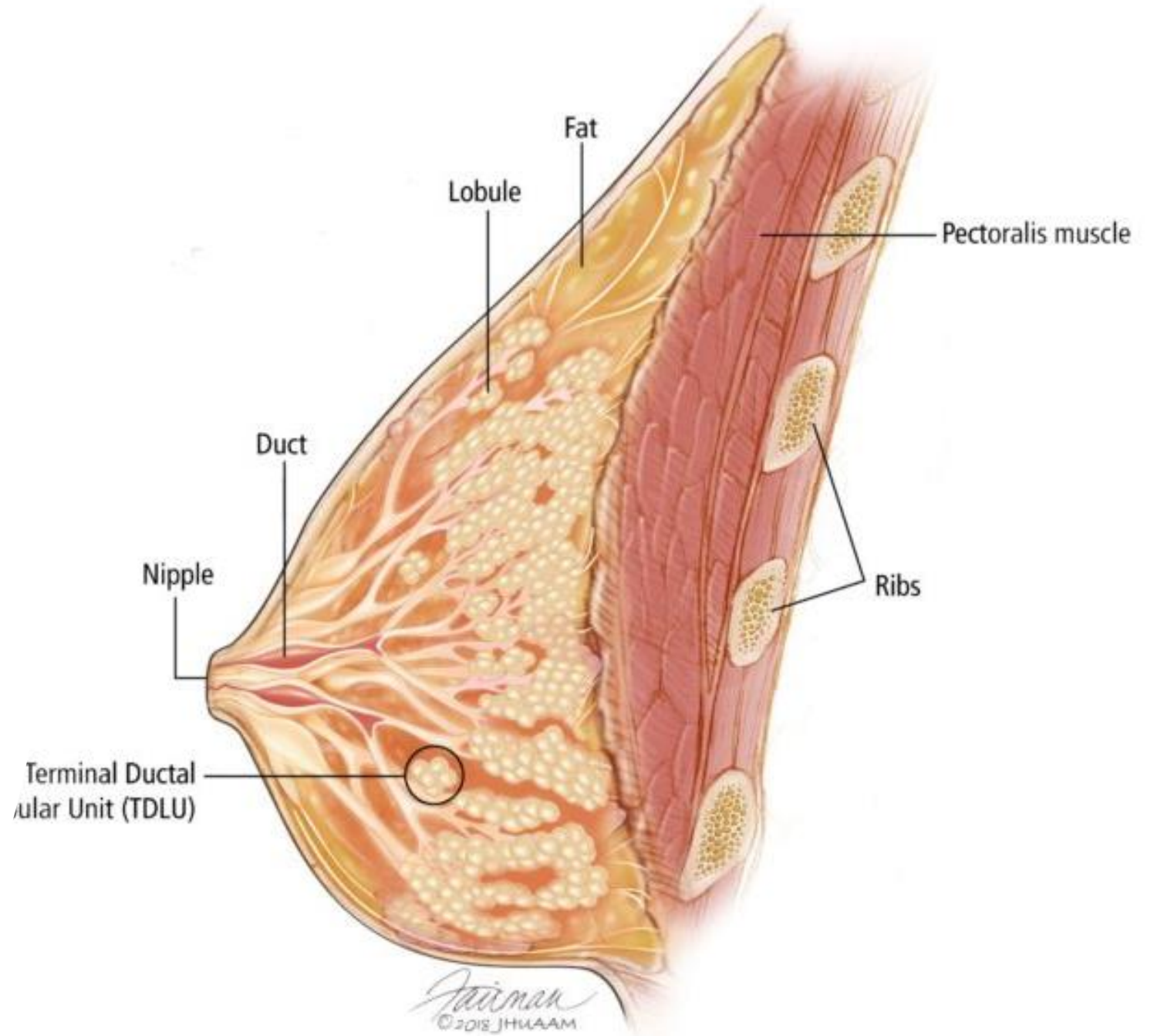
- “An infant's immune system doesn't mature until around **2 to 3 months**,” Dr. Sabella says. “In those first few months, the immune system — especially cell-mediated immunity — becomes more developed. This is very important in helping a child fight off viruses.”

Does breastfeeding lower your immune system?

- We found a dramatic **decrease** in **the** proportion of **immune** cells within **the** first two weeks of birth. **The** number of **immune** cells dropped from as high as 70% in colostrum to less than 2% in mature **breast milk**.

- Anatomy and breastmilk production

Anatomy and breastmilk production



Progesterone

Growth hormone

Estrogen

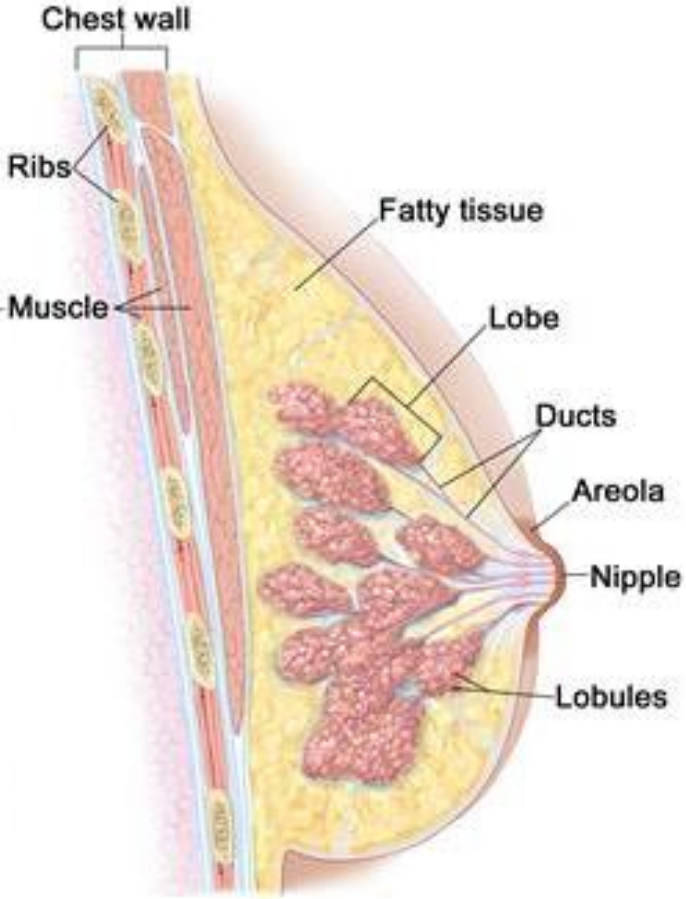
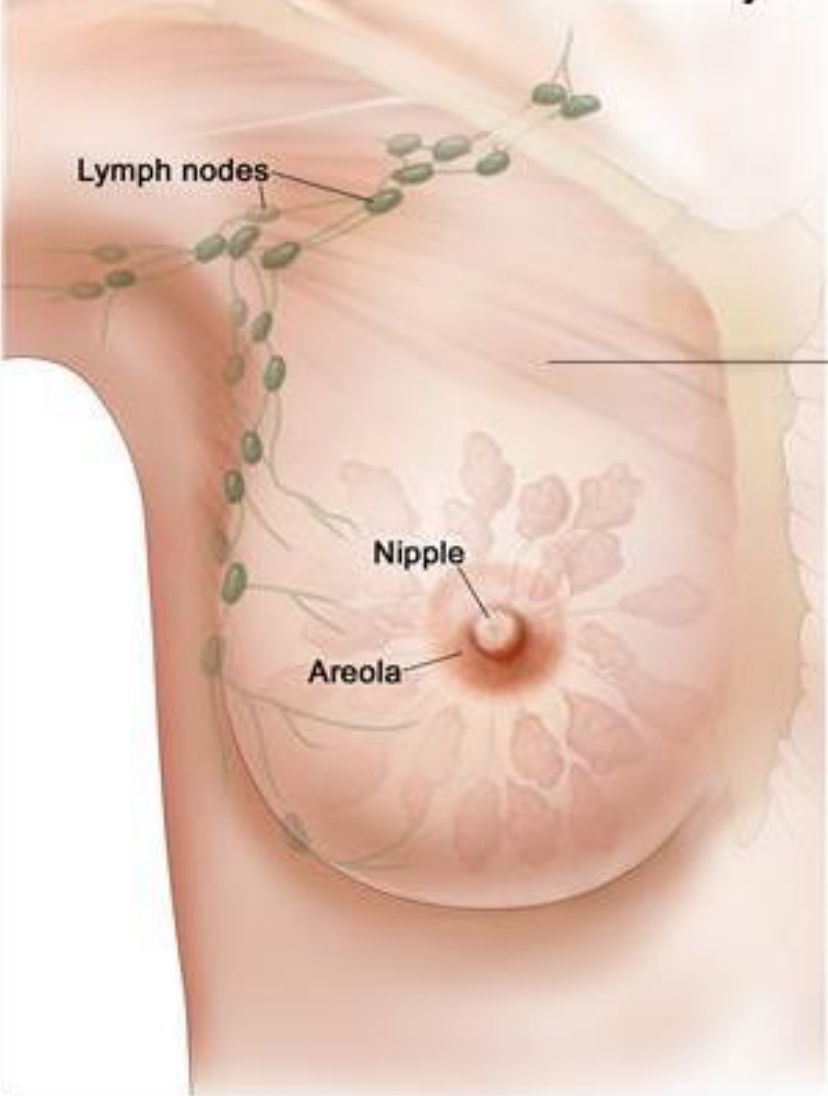
Testosterone

Prolactin

HORMONES FOR BREAST GROWTH

BREASTHOW.COM

Anatomy of the Female Breast



Mammogenesis

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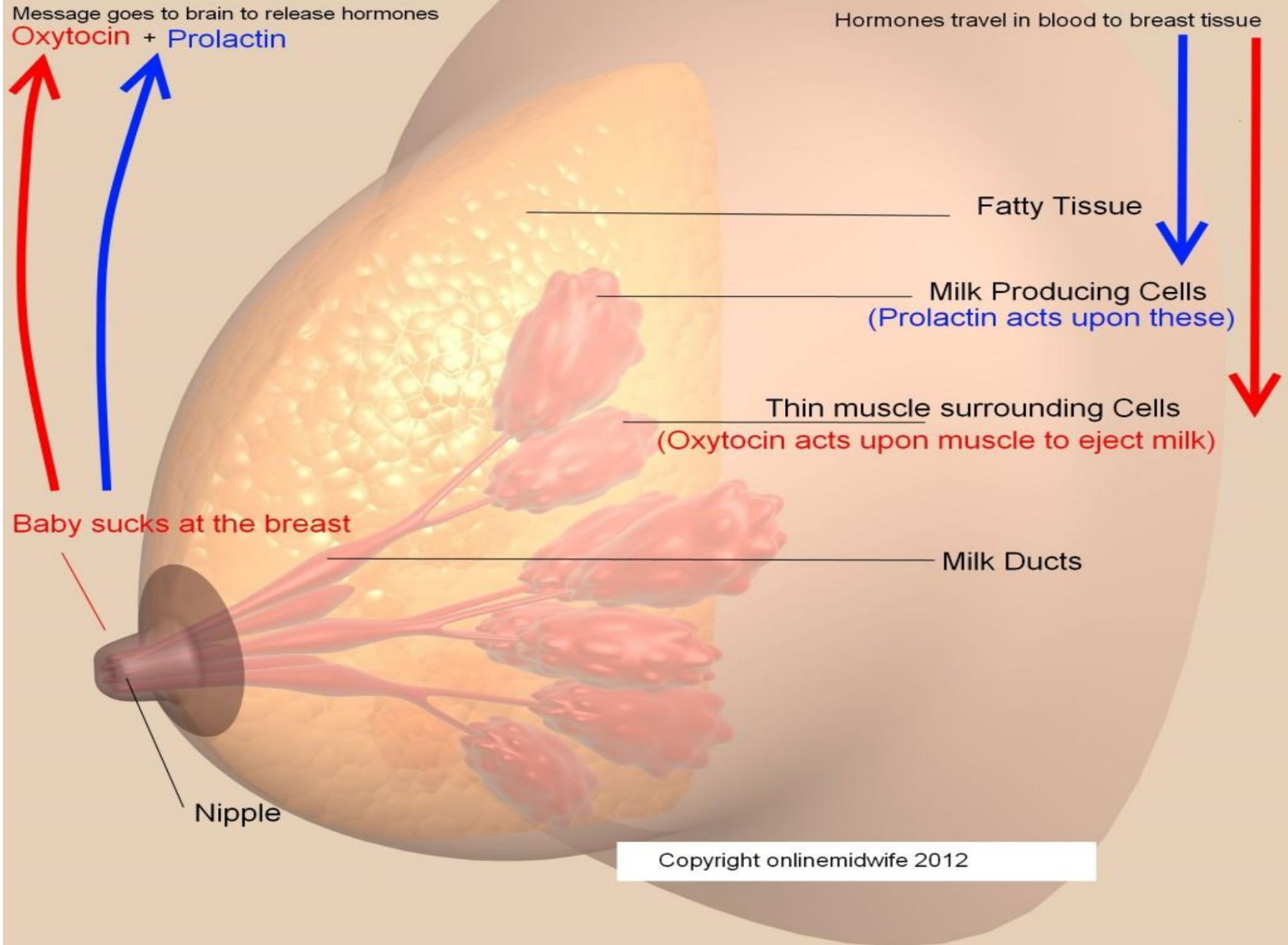
Structure of the breast

- **Parenchyma** consists of **10-15 ducts** extending from the nipple to terminate in grape-like clusters known as **alveoli** (basic unit) via ductules from lobules.
- There are **15-20** pyramid shaped **lobes** separated by cooper ligament and each contains lobules which are further separated by fat and connective tissue(**stroma**).
- Nipple surrounded by area of hyperpigmented skin – **areola**

MAMMOGENIC COMPLEX OF HORMONES

- Growth hormone (anterior pituitary)
- Estrogen (ovary)
- Progesterone (ovary)
- Prolactin (anterior pituitary)
- Glucocorticoids (adrenal glands)
- Placental lactogen (placenta)

Anatomy of the Breast - How Breastmilk is Produced





Breast development (**mamogenesis**)

1

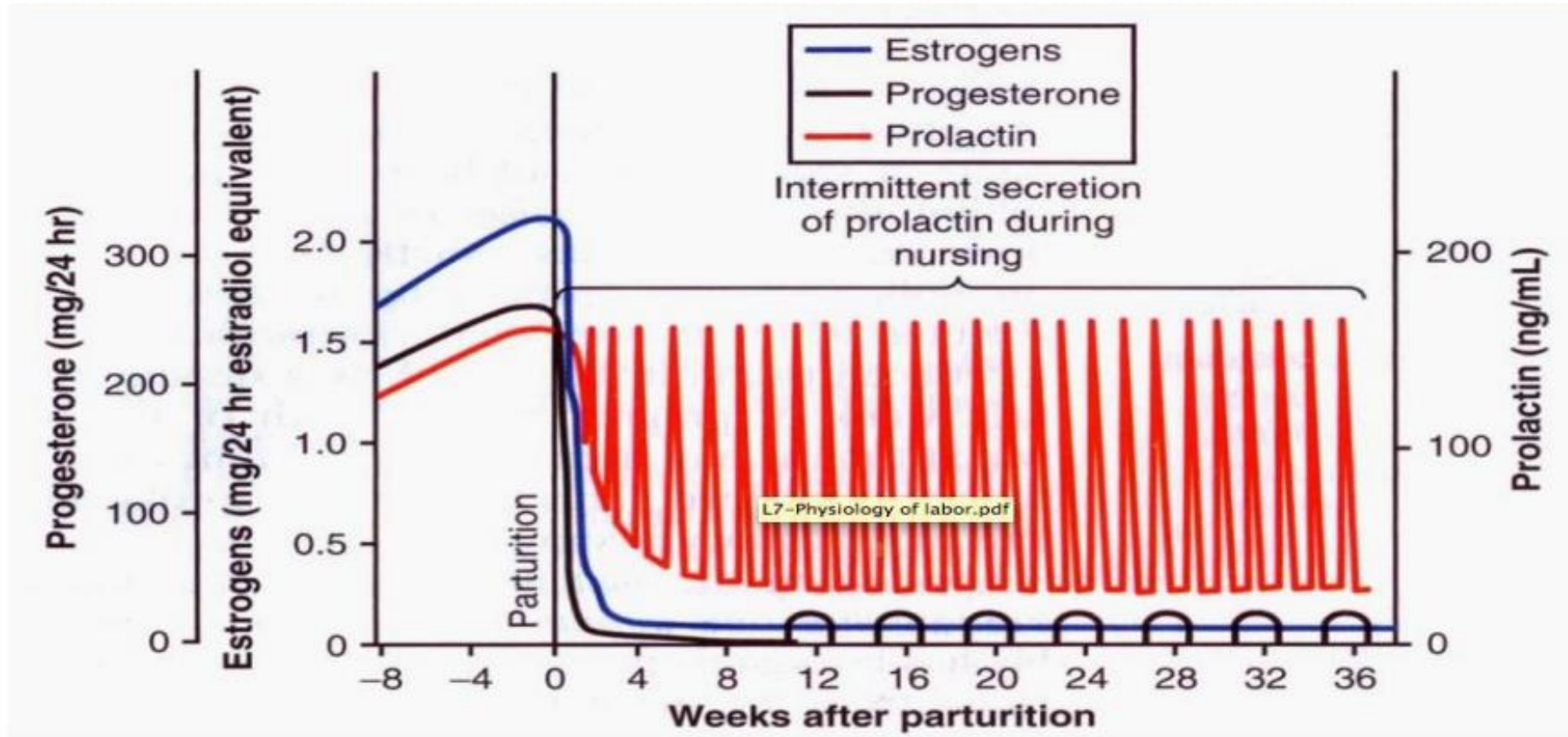
Important

Reproductive hormones	Function	Notes
Estrogen (placenta)	<ul style="list-style-type: none"> ❖ Growth & branching of ductal system (with GH) ❖ Fat deposition in the stroma 	<p>Although estrogen and progesterone are essential for physical development of the breasts, they inhibit actual production and secretion of milk in pregnancy</p> <p>“there is no milk secretion during pregnancy . Prolactin is inhibited by Estrogen and Progesterone , so ones their levels fall down (delivery or intrauterine fetal death) prolactin can produce milk”</p>
Progesterone (placenta)	<ul style="list-style-type: none"> ❖ Growth of lobule-alveolar system (budding of alveoli and secretory changes in epithelial cells) 	
Prolactin (anterior pituitary)	<ul style="list-style-type: none"> ❖ Its level increases during pregnancy (10-20 times) ❖ Its main function is milk production also stimulating mammary gland ductal growth and proliferation of alveolar epithelial cells. 	<p>Sudden drop in Estrogen & Progesterone after delivery allows milk production</p> <p>Prolactin is controlled mainly by hypothalamic hormone PIH (Dopamine)</p> <p>“Prolactin inhibitory hormone”</p> <p>“ normally it’s under inhibitory effect , there is no stimulator for Prolactin “</p>
Human placental lactogen (placenta)	<ul style="list-style-type: none"> ❖ Facilitate mammogenesis ❖ Delay milk production 	<p>It also called “ Somatomammotropin ”</p> <p>“ Has no related to milk secretion”</p>



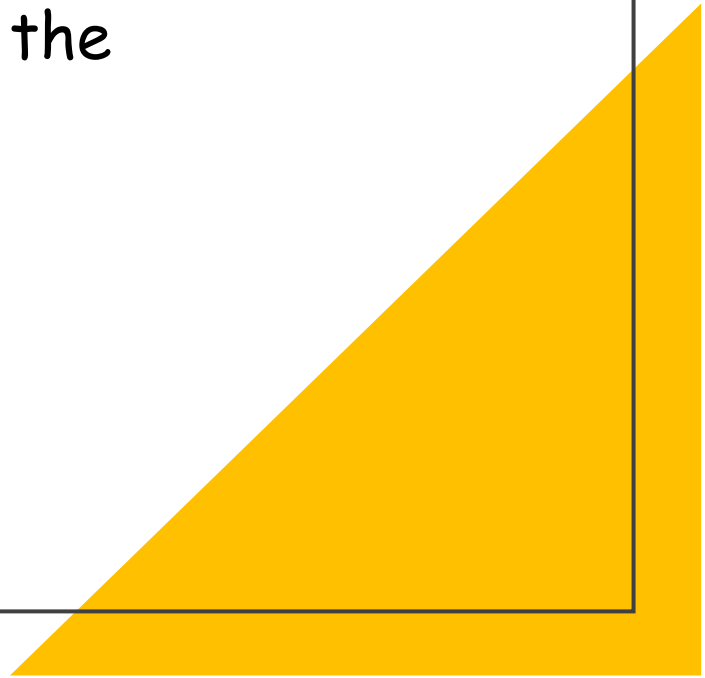
Galactopoeisis cont. + The Suckling Reflex

- Normally, All through the lactation, no ovulation occur. But nowadays, this is disturbed because of well-fed mothers and irregular lactation
- Prolactin decrease the GnRH so no ovulation occur > cause of infertility in some woman
- Intermittent secretion of prolactin during nursing



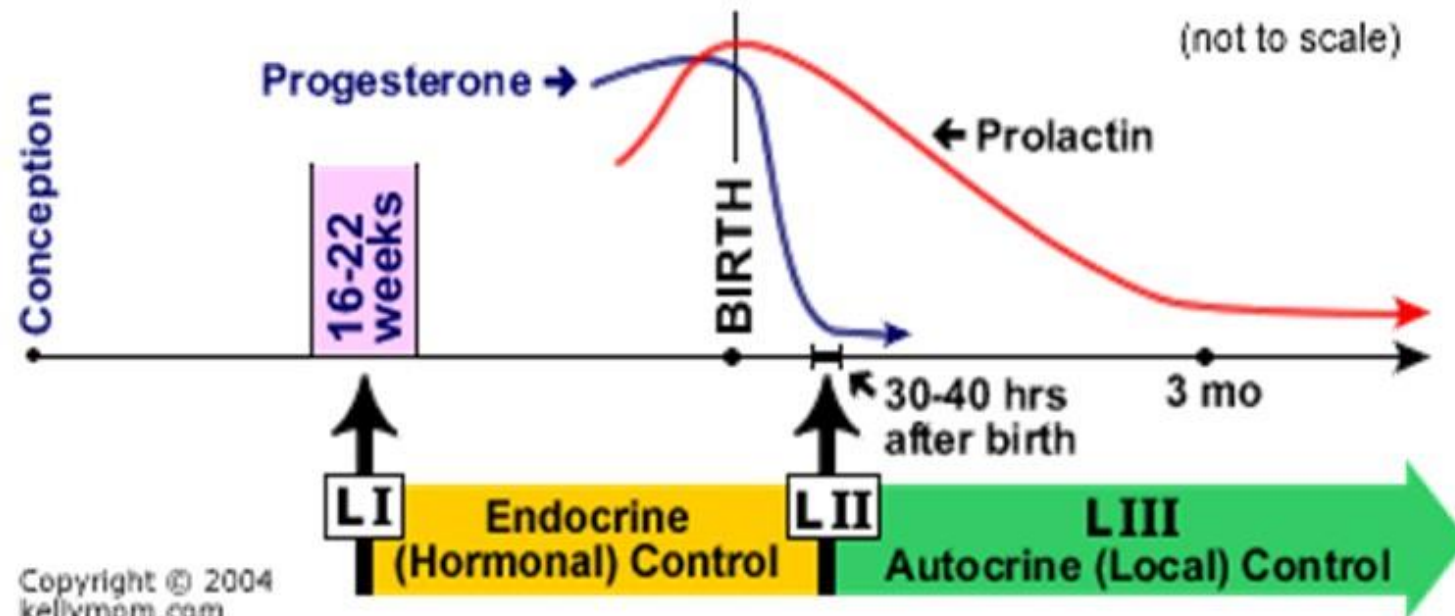
Lactogenesis

- Definition of lactation Lactation describes the production of breast milk and its secretion from the mammary gland after delivery.



กระบวนการผลิตน้ำนม

- Lactogenesis I & II** น้ำนมแม่ ผลิตจากการทำงานของฮอร์โมน
Lactogenesis III น้ำนมแม่ ผลิตจากความต้องการของลูก



Physiology of Lactation

- Lactation can be divided into 5 stages:
 1. Mammogenesis-Development of breasts to a functional state
 2. Lactogenesis-Synthesis and secretion of milk from the breast alveoli
 3. Galactokinesis-Ejection of milk outside the breast
 4. Galactopoiesis-Maintenance of lactation
 5. Involution-regression and atrophy post lactation

Lactation

- After birth, the following hormones are produce during **breastfeeding**
 - **Prolactin** levels rise with nipple stimulation
 - Alveolar cells make milk in response to prolactin when the baby sucks
 - **Oxytocin** causes the alveoli to squeeze the newly produced milk into the duct system

Galactogenesis

- The continuation of lactation requires stimuli to promote milk production and removal or inhibition of stimuli that retard milk production.
- Stimulation of the nipples (teats) by either milking or suckling elicits an abrupt increase in blood levels of prolactin.
- The increased secretion of prolactin is the result of a neural reflex mediated through the hypothalamus that regulates prolactin release from the adenohypophysis.

HUMAN CHORIONIC GONADOTROPIN



hCG is produced by the placenta after implantation. It supports the function of the corpus luteum, a temporary structure in the ovaries essential in early pregnancy. It's also the hormone detected by pregnancy tests.

PROGESTERONE



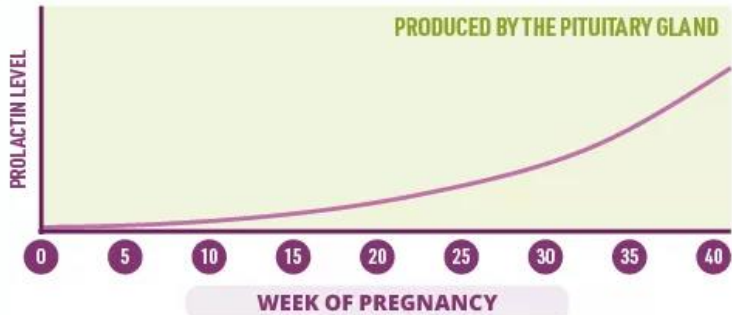
Progesterone helps establish the placenta. It stimulates growth of blood vessels that supply the womb and inhibits contraction of the uterus so it grows as the baby does. It also strengthens pelvic wall muscles for labour.

OESTROGEN



Oestrogen helps the uterus grow, maintains its lining, and helps foetal organs develop. Activates and regulates production of other hormones. With progesterone, stimulates breast growth and milk duct development.

PROLACTIN



Prolactin is the main hormone needed to produce breast milk. It contributes to enlargement of the mammary glands and prepares them for milk production. Progesterone inhibits lactation during pregnancy.

RELAXIN



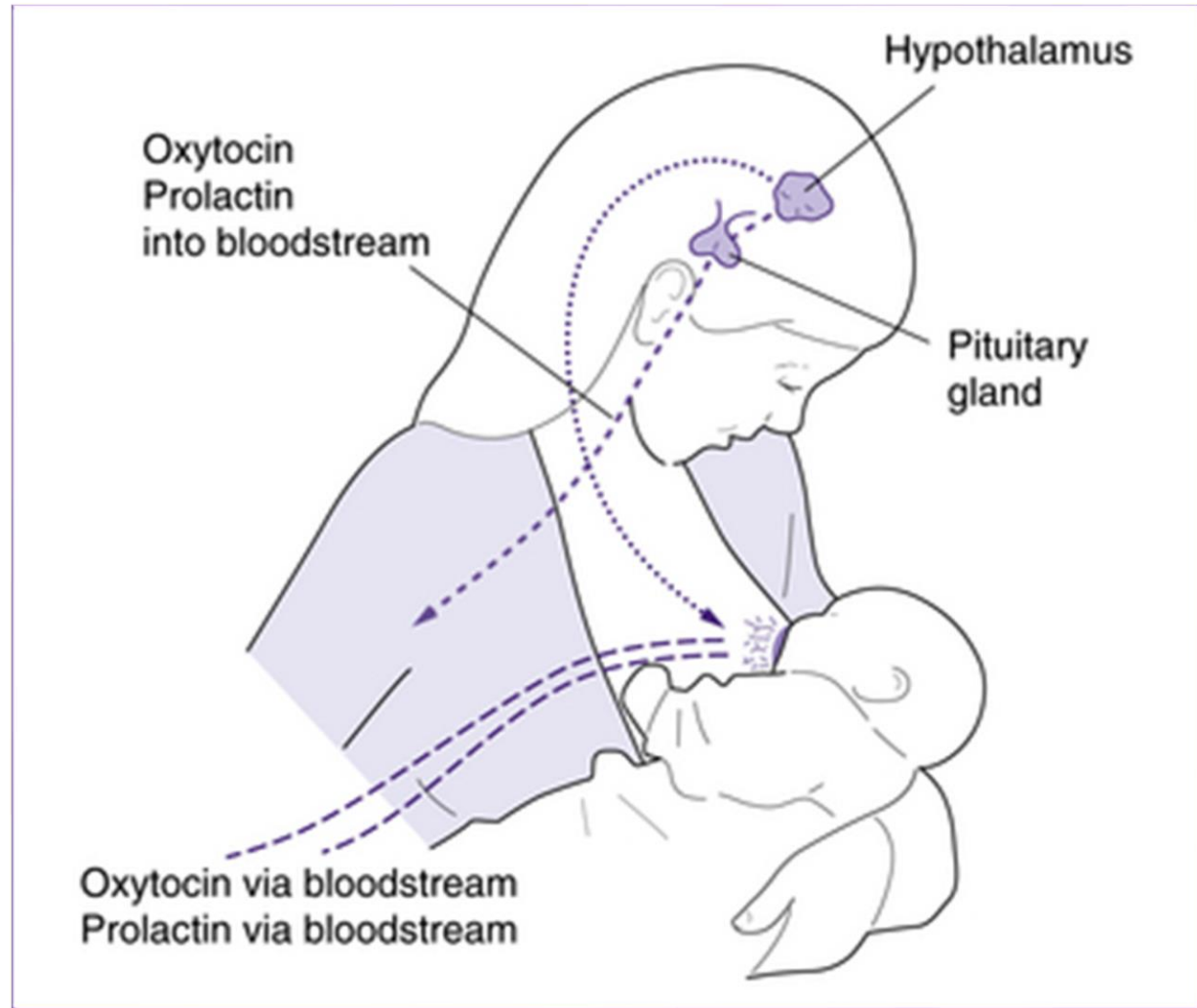
Relaxin inhibits uterus contraction to prevent premature birth. It relaxes blood vessels, increasing blood flow to the placenta and kidneys. It relaxes the joints of the pelvis and softens and lengthens the cervix during birth.

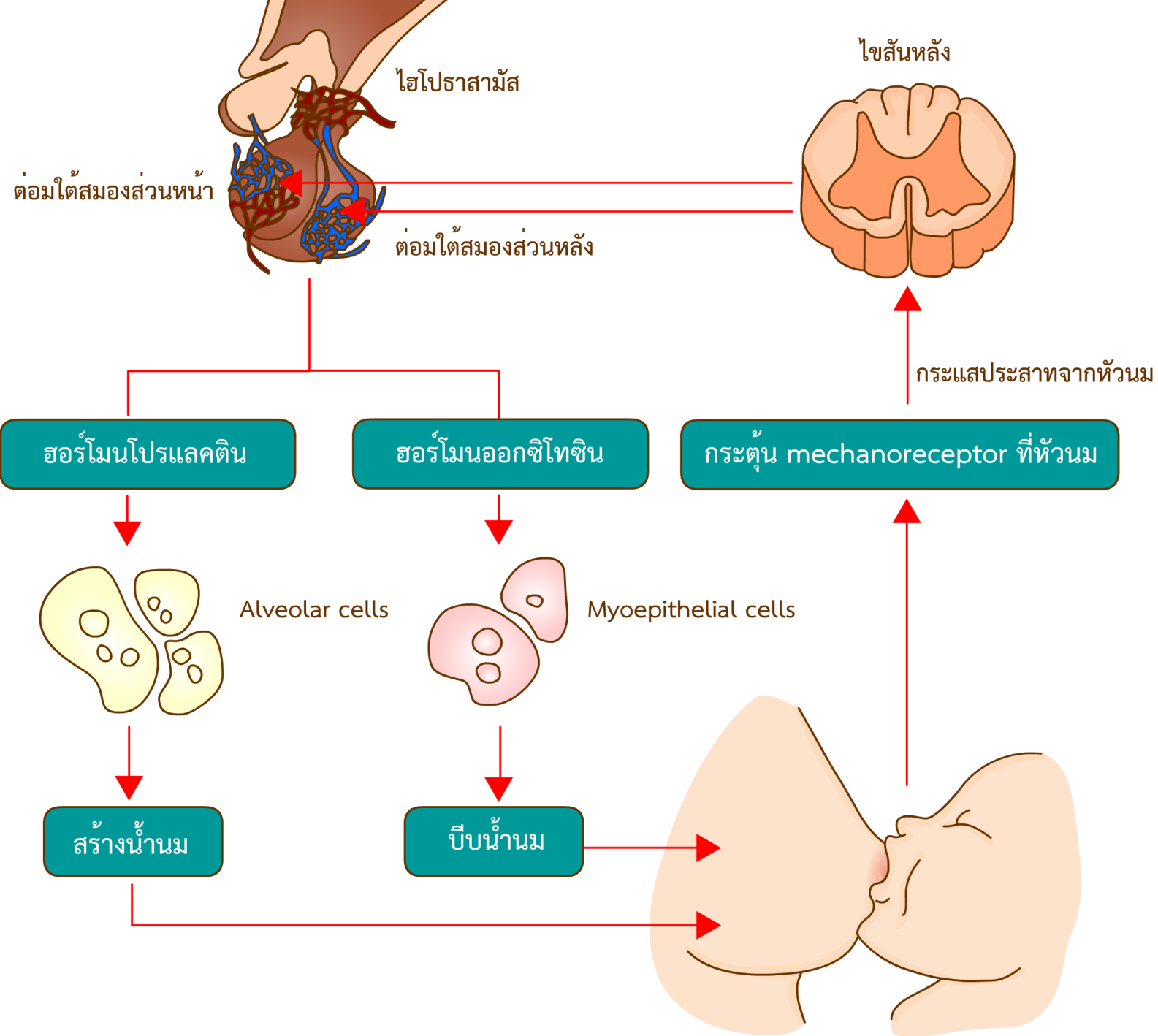
OXYTOCIN



Oxytocin levels rise at the start of labour, stimulating contractions of uterine muscle. It triggers production of prostaglandins, which increase contractions further. If labour doesn't start naturally, it can be used to induce it.

Milk ejection reflex





What is milk ejection reflex?

The **let-down reflex (milk ejection reflex)** By **sucking** at the breast, your baby triggers tiny nerves in the nipple. ... One of these hormones (**prolactin**) acts on the milk-making tissues. The other hormone (**oxytocin**) causes the breast to push out or '**let down**' the milk.

Oxytocin Reflex



These HELP reflex

These HINDER reflex

Exercise 2

- What is milk ejection reflex?
- How do you trigger a let down?



Can viruses pass through breast milk?

- Three **viruses** (CMV, HIV, and HTLV-I) frequently cause **infection** or disease as a result of **breast-milk** transmission. Reasonable guidelines have been pro-posed for when and how to avoid **breast milk** in the case of maternal **infection**

Can drugs pass through breast milk?

- You **can pass** harmful things, like alcohol, **drugs** and lead, to your baby in **breast milk**.
- This **can** cause serious problems for your baby. Don't smoke, drink alcohol or use harmful **drugs** when you're **breastfeeding**.

Does breast milk have antiviral properties?

- Human **milk** contains many components with antibacterial and **antiviral** activity. Some of these are major **milk** proteins, such as SIgA antibodies and lactoferrin.
- It is striking that the host defense factors in **milk** are non-inflammatory, which may be functional on mucosal membranes and agreeable to the infant.

Can I take antiviral while breastfeeding?

- The American Academy of Pediatrics considers acyclovir to be safe **during breastfeeding**, according to the researchers. And the current study, the researchers say, confirms that Valtrex is not found in breast milk. They conclude that Valtrex is safe **during breastfeeding**.

Is it OK to give baby someone else's breast milk?

- The AAP does not encourage using informally shared breast milk, citing the risks of spreading disease. It can also expose an infant to medications, alcohol, drugs, or other contaminants.

Can a baby get an STD from breastfeeding?

- Sexually transmitted infections (**STIs**) are also called **sexually transmitted diseases**, or **STDs**. **STIs** include chlamydia, gonorrhea, trichomoniasis, genital herpes, genital warts, HIV, and syphilis. Some **STIs can** pass from mother to **baby** during pregnancy and through **breastfeeding**

Can I breastfeed with syphilis?

- Yes, you **can breastfeed** if you have **syphilis**, but not if you have a sore on one or both of your breasts. If you have **syphilis**, it is possible to spread the infection to any part of your breast, including your nipple and areola. You **can** then spread **syphilis** to your baby.

Can I drink Coke and breastfeeding? Caffeine While **Breastfeeding**

- In moderation, a small amount of caffeine will not harm your **breastfed** baby. When caffeine enters your bloodstream, a small amount **can** be passed along to your baby through **breast milk**.

Which drug is not safe in lactation?

- Drugs contraindicated during breastfeeding include **anticancer drugs**, **lithium**, oral **retinoids**, iodine, **amiodarone** and gold salts. An understanding of the principles underlying the transfer into breast milk is important, as is an awareness of the potential adverse effects on the infant

Which medication should be avoided while breastfeeding?

- ANSWER: Only a few drugs pose a clinically significant risk to breastfed babies. In general, antineoplastics, drugs of abuse, some **anticonvulsants**, ergot alkaloids, and radiopharmaceuticals should not be taken, and levels of **amiodarone**, **cyclosporine**, and **lithium** should be monitored.

What diseases can be transferred through breast milk?

- Birth Defects.
- Breast Surgery.
- Coronavirus Disease (COVID-19)
- Ebola Virus Disease.
- Food-borne and Waterborne Illness.
- **Hepatitis B** or C Infections.
- Herpes Simplex Virus (HSV)
- **HIV.**

Do not breast feed

- HIV
- CMV-Cytomegalovirus
- Herpes at breast
- TB
- Drug addiction
- Galactosemia-infant

domperidone
(motilium or mirax)

Metoclopramine (plasil)

Before, during and after childbirth, all women have the right to high quality care. This includes:



Antenatal and
intrapartum



Newborn



Postnatal



Mental health



World Health
Organization

[#COVID19](#) [#CORONAVIRUS](#)



Women with COVID-19 can **breastfeed** if they wish to do so. They should:



Practice respiratory
hygiene and wear a mask



Wash hands before and
after touching the baby



Routinely clean and
disinfect surfaces



World Health
Organization

#COVID19 #CORONAVIRUS

If a women with **COVID-19** is too unwell to breastfeed, she can be supported to safely provide her baby with breastmilk in other ways, including by:



Expressing
milk



Relactation



Donor human
milk



World Health
Organization

#COVID19 #CORONAVIRUS

Breastfeeding and COVID-19

Breastfeed to protect your infants and children from getting sick and for their healthy growth and development.

Breastfeeding is particularly effective against infectious diseases because it **strengthens the immune system** by transferring antibodies from you.



World Health
Organization
REGIONAL OFFICE FOR THE Eastern Mediterranean

#COVID19
#CORONAVIRUS

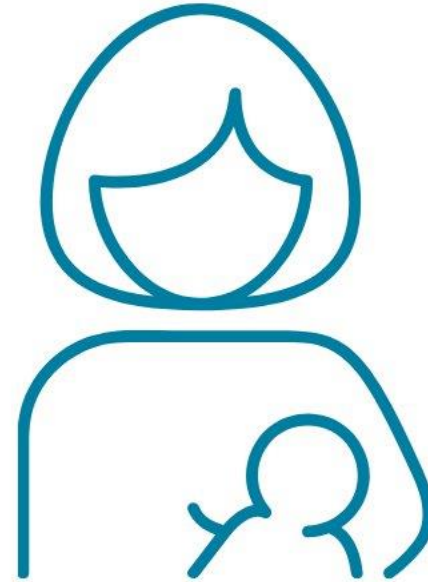




COVID-19 and breastfeeding.

Breastmilk provides protection against many illnesses.

Keep breastfeeding even if you are sick.



If you need help with breastfeeding, or want to restart, call 1800 686 268.



Breastfeeding Helpline
1800 mum 2 mum
1800 686 268

Visit
breastfeeding.asn.au



Exercise:1

Have a written infant feeding policy that is routinely communicated to staff and parents.