



سَيِّدِي الرَّحْمَنُ الرَّحِيمُ

COVID-19: The Novel Coronavirus 2019

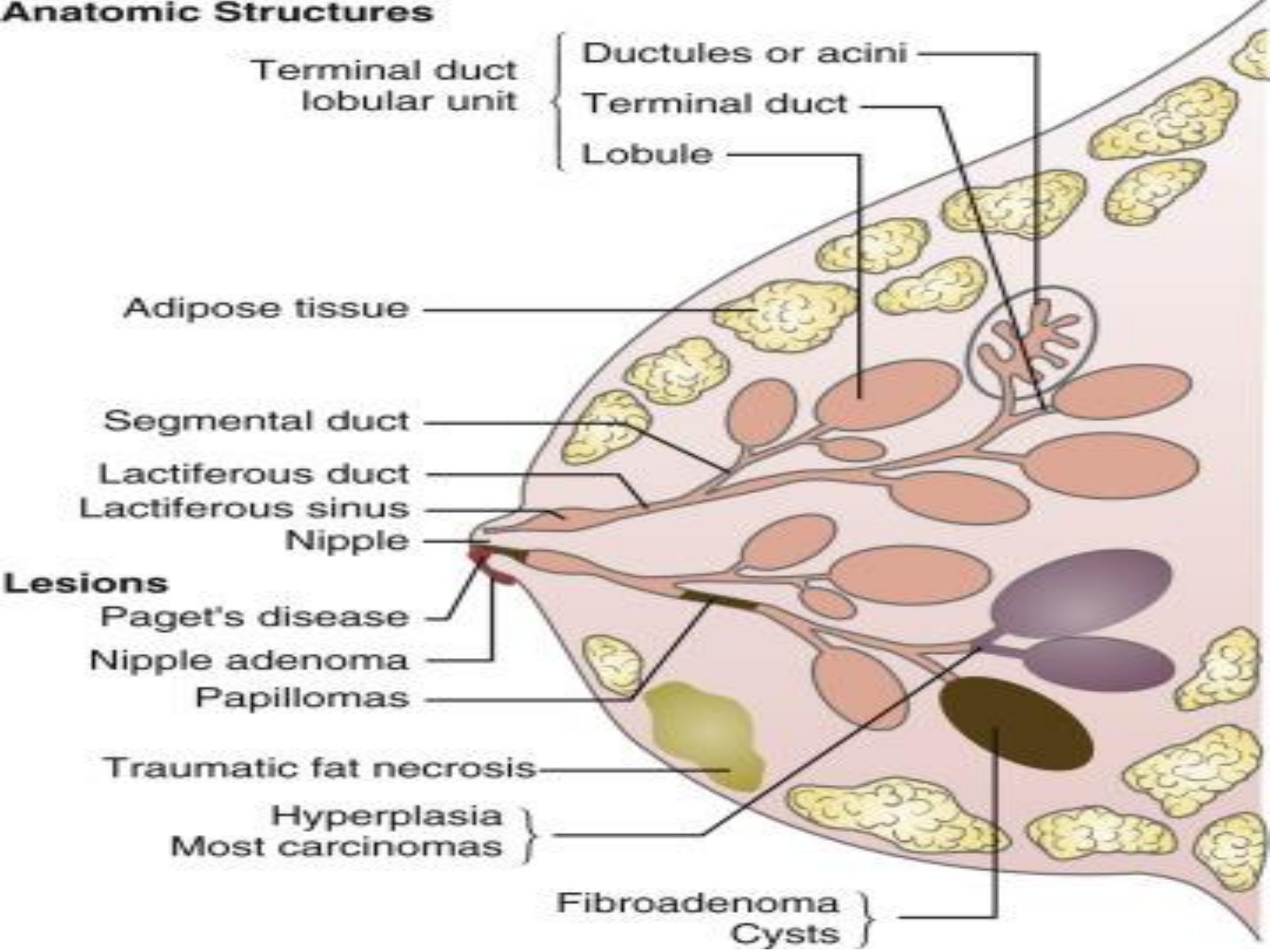
• Physiology of lactation



ANATOMIC CHANGES

- The breast is composed of a stroma consisting of fat and connective tissue that supports a tubuloalveolar parenchyma .

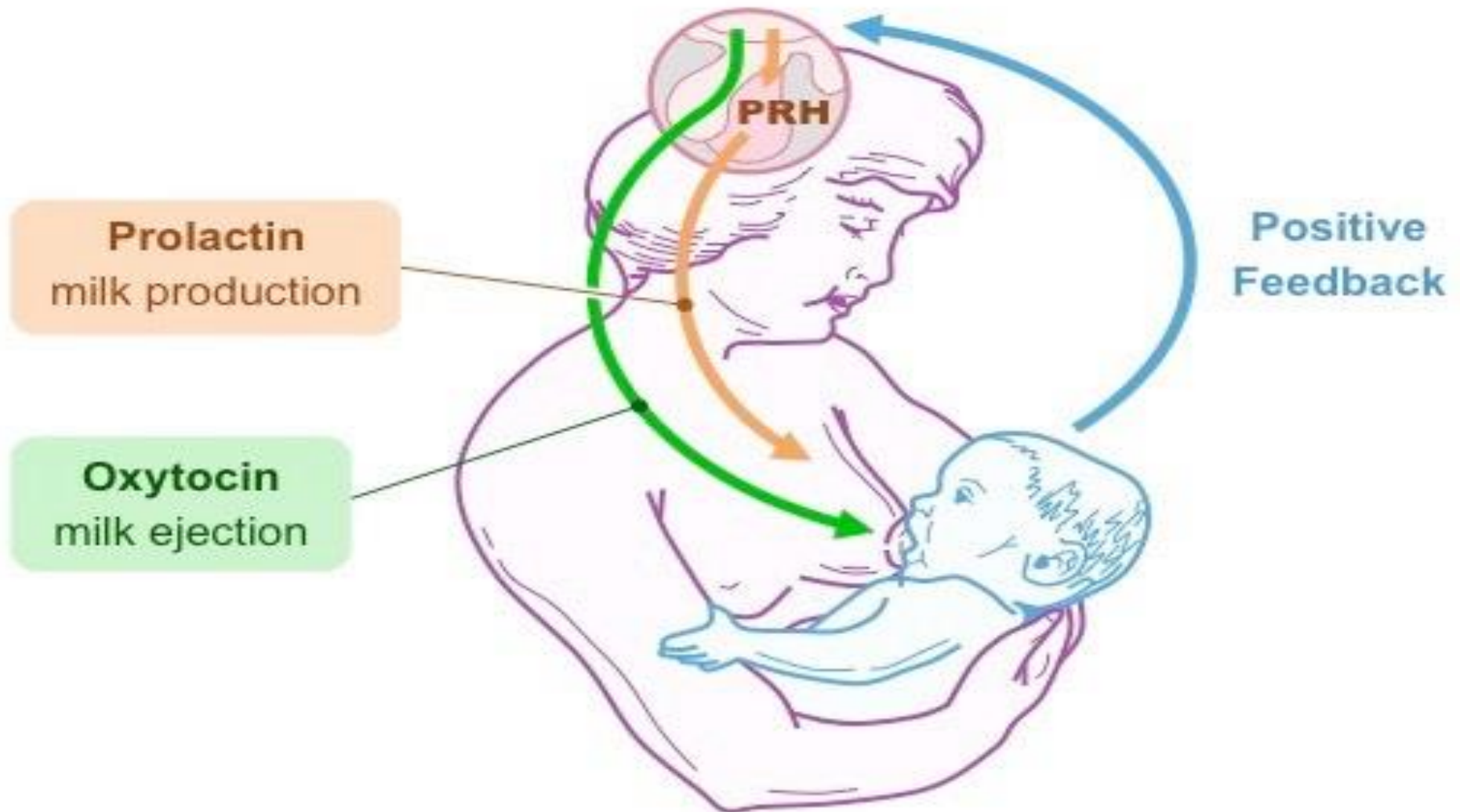
Anatomic Structures



Milk components

- Milk is a complex fluid with both chemical and cellular components:
- The **major milk components** include **lactose** (main sugar), **fat**, **proteins** (casein, alpha-lactalbumin, lactoferrin and secretory IgA) and cells (macrophages, neutrophils, lymphocytes and epithelial cells).

REGULATION OF MILK PRODUCTION



Suckling



Hypothalamus



Pituitary gland

Pituitary gland



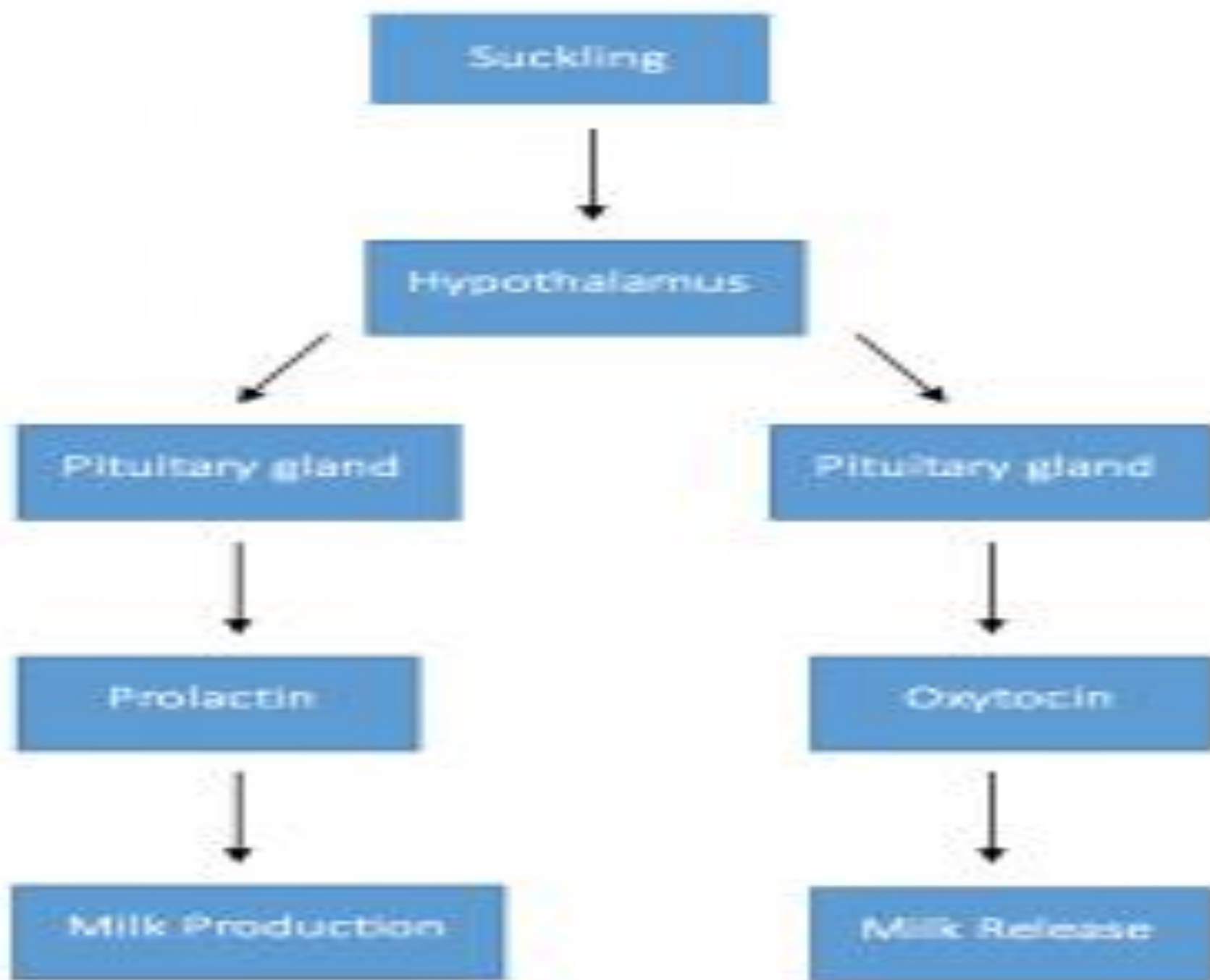
Prolactin

Oxytocin



Milk Production

Milk Release



LACTATION

- The cyclical process of milk synthesis and secretion is termed **lactation**
- Lactation occurs with the help of 2 hormones, prolactin and oxytocin
- During the second stage of lactogenesis, the breast becomes capable of milk production but for the ongoing synthesis and secretion of human milk, the mammary gland must receive hormonal signals
- These signals are produced by direct response to stimulation of the nipple and areola (mammary), are then relayed to the central nervous system

HORMONES INVOLVED IN BREAST DEVELOPMENT DURING PREGNANCY AND MILK PRODUCTION FOLLOWING BIRTH

HORMONE	ORIGIN	FUNCTION
<i>During Pregnancy</i>		
Prolactin	Pituitary gland	Stimulates development of milk glands
Estrogen	Ovary and placenta	Stimulates development of milk ducts; stimulates prolactin release, but helps block milk production
Progesterone	Ovary and placenta	Stimulates development of milk glands; blocks stimulation of milk production by prolactin
<i>After Childbirth</i>		
Prolactin	Pituitary gland	Stimulates milk production
Oxytocin	Pituitary gland	Stimulates milk ejection

Causes of Decrease in Breast Milk Supply



**ignoring
your health**



**too much
caffeine**



smoking



**taking certain
medication**



stress



**not watching
your diet**



SUPPRESSION OF LACTATION

- **L-dopa**
- **Dopamine**
- **Bromocriptine**
- **Ergot derivatives**
- **Androgens**
- **Estrogen, oral contraceptives that contain high-dose estrogen and a progestin.**

Table 1. Drug safety classification for nursing mothers to treat COVID-19

Pharmacological Group	Drug	Classification to use during lactation
Antimalarial	Chloroquine	Safe
	Hydroxychloroquine	Safe
Antimicrobial (antibiotics)	Azithromycin	Safe
Antiparasitic	Ivermectin	Probably safe
	Nitazoxanide	Probably safe
Antiviral	Favipiravir	Not classified
	Lopinavir	Safe
	Oseltamivir	Safe
	Remdesivir	Safe
	Ribavirin	Safe
Corticosteroids	Dexamethasone	Probably Safe
	Methylprednisolone	Safe
Immunomodulators	Alpha interferon	Safe
	Interferon beta	Safe
	Tocilizumab	Safe



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



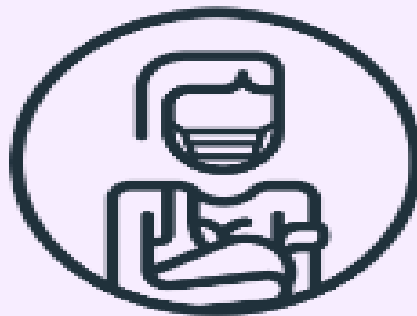
Practice respiratory
hygiene and wear a mask



Wash hands before and
after touching the baby



Routinely clean and
disinfect surfaces



Close contact and early, exclusive breastfeeding helps a baby to thrive.

A woman with COVID-19 should be supported to breastfeed safely, hold her newborn skin-to-skin, and share a room with her baby.



**World Health
Organization**

#COVID19 #CORONAVIRUS