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Figure 1. The effect of the initial concentration of the monomer on the polymerization of  $\alpha$ -methylstyrene initiated by  $\text{C}_6\text{H}_5\text{MgBr}$  in THF at  $-78^\circ\text{C}$ .

**4. What characteristics are necessary for a newborn to be termed as having a low birth weight?**

- a. Birth weight less than 3.1 kg (7 pounds) and born preterm (before 37 weeks gestation).
- b. Birth weight less than 2 kg (4.4 pounds) and born preterm or term.
- c. Birth weight less than 1.5 kg (3.3 pounds) and born preterm, term, or post-term.
- d. Birth weight less than 2.5 kg (5.5 pounds) and born preterm, term, or post-term.

**5. Which of the following is an early feeding cue in the newborn?**

- a. Putting the hand in the mouth.
- b. Crying or acting angry.
- c. Opening the mouth and sucking on the tongue.
- d. Very mobile and waving extremities.

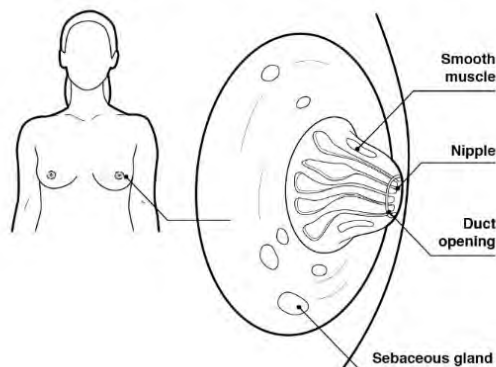
**6. All of the following are signs of adequate milk volume production EXCEPT for:**

- a. audible swallowing and sucking from the infant during feeding.
- b. 6-8 bilateral breast feedings in a 24-hour period.
- c. milk visible on the infant's mouth after feedings.
- d. 6-8 wet diapers per day by day 4 of life.

**7. Colostrum differs from mature breast milk in that it contains:**

- a. lower levels of carbohydrates from lactose.
- b. higher levels of carbohydrates from lactose.
- c. lower levels of protein.
- d. lower levels of immune system factors.

**8. Review the image of nipple anatomy below. Which structure is responsible for contracting the nipple tissue and causing the nipple to be erect?**



- a. Smooth muscle.
- b. Duct opening.
- c. Sebaceous gland.
- d. Areola.

**9. A potential postpartum complication in newborns born to diabetic mothers is:**

- a. hyperglycemia.
- b. impaired kidney function.
- c. hypoglycemia.
- d. low birth weight.

**10. The symptoms most commonly seen with postpartum thyroiditis include:**

- a. symptoms of hyperthyroidism.
- b. symptoms of hypothyroidism.
- c. symptoms of septic shock.
- d. symptoms of hyperthyroidism followed by symptoms of hypothyroidism.

**11. A 32-year-old female with polycystic ovarian syndrome has delivered her first child. She plans on breastfeeding and asks if she will be able to with polycystic ovarian syndrome. The most appropriate answer is:**

- a. she should have no issues with milk production.
- b. she will not be able to breast feed because this condition prevents her from producing milk.
- c. she will need to take medication every day to balance her hormone levels so she can produce milk.
- d. she may have issues with milk production, but she should attempt to breast feed first.

**12. When feeding multiples, which breastfeeding position shown below best represents a combination of the football hold and cradle hold?**



**#1**



**#2**



**#3**



**#4**

- a. #1.
- b. #2.
- c. #3.
- d. #4.

**13. Which of the following infants would be at greatest risk for developing hypoglycemia in the first 24 hours of life?**

- a. Healthy, full-term infant born to a mother with a strong family history of type 2 diabetes.
- b. An infant at 39 weeks gestational age with a normal vaginal delivery.
- c. An infant of a mother who required a glucose infusion during labor.
- d. An infant at 41 weeks gestational age with a normal weight.



## Answer Key and Explanations

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**1. B:** By the 3<sup>rd</sup> day of life, the goal is to breast feed a minimum of 10-12 times over a 24-hour period. At this point, milk volume is beginning to respond to the needs of the infant. Some mothers may be concerned that they will not produce enough milk to meet the needs of their infant, but the volume will adjust to suit the needs of the infant. Issues with uncomfortable engorgement and nipple irritation may still continue for a couple of weeks, but should improve.

**2. C:** In order to form a seal over the areola and nipple, the infant's lips should not be in a pursed, or "kissing," position. The infant should have the ability to flange the upper and lower lips in order to form a seal over most of the areola and nipple. The upper lip frenulum should be flexible in order for the upper lip to flange over the breast. If a proper seal is not established with latching on, the infant will frequently slip off the breast and will need to be repeatedly repositioned.

**3. A:** Using the chart, follow the line for a 9-month-old child to the point where it intersects with the line at 21 pounds. This point falls at the 50<sup>th</sup> percentile. Plot the same point for a 9-month-old who is 29 inches in length and this falls at the 50<sup>th</sup> percentile as well. The World Health Organization established new growth charts in 2006 for children age birth to 2 years. The chart identifies how the child ranks on weight and length norms. The data used to create these norms is based on a child who has been breastfed for at least 4 months, preferably up to 1 year.

**4. D:** An infant this is classified as having a low birth weight will have a birth weight less than 2.5 kg (5.5 pounds). Gestational age can be preterm, term, or post-term. Newborns weighing less than 1.5 kg (3.3 pounds) are termed as having a very low birth weight and they are usually born preterm.

**5. C:** Opening the mouth and sucking on the tongue is an early feeding cue. The newborn may also appear slightly restless while sleeping and may turn the head from side to side. Middle, or active, feeding cues include appear awake but calm, increasing movement, and putting the hand in the mouth. Late cues involve the infant appearing angry with a red-faced cry and waving the extremities.

**6. B:** The newborn should breast feed a minimum of 10-12 times in a 24-hour period. They will also have 6-8 wet diapers a day by the 4<sup>th</sup> day of life if there is adequate milk volume for nutrition. If the infant is receiving an appropriate volume of milk, they can be heard swallowing during feedings and may have milk on their mouth after the feeding. A small amount of milk may also be regurgitated during burping.

**7. A:** Colostrum contains lower levels of carbohydrates from lactose than mature milk. It also has a higher protein content and higher level of immune system factors than mature breast milk. Colostrum is produced during pregnancy and continues for up to 72 hours following delivery. Because of its lower carbohydrate levels, it is thought its function is more to support the immune system rather than provide nutrition.

**8. A:** With stimulation, the smooth muscle in the nipple tissue contracts which causes the nipple to become erect. The duct openings in the nipple function to transport milk from the milk ducts to the outside of the breast. The sebaceous glands, or glands of Montgomery, keep the nipple and areola protected and lubricated.

**9. C:** Newborns of diabetic mothers are more likely to be hypoglycemic. This occurs because insulin production has been increased while in utero to accommodate the elevated blood sugar levels of the mother. Once delivery occurs and the infant is surviving without the placenta, the elevated insulin level can lead to hypoglycemia. This will resolve itself once the pancreas adjusts insulin production appropriately, however, blood sugar in the infant should be monitored closely.

**10. D:** Postpartum thyroiditis is characterized by 2 phases: the inflammatory phase, which exhibits symptoms of hyperthyroidism, and the cell destructive phase, which exhibits symptoms of hypothyroidism. This is a fairly common postpartum thyroid condition and it is often misdiagnosed as anxiety. Though postpartum thyroiditis can become a permanent condition, it usually resolves on its own within a few weeks following delivery.

**11. D:** With polycystic ovarian syndrome, elevated levels of female androgens may decrease milk production. Mothers with PCOS should still attempt to breastfeed and close monitoring can be done to assure the infant is receiving adequate nutrition. Supplementation may be necessary if the infant is not getting the necessary nutrition. There are no medications that can treat PCOS and stimulate adequate milk production.

**12. C:** A combination of the football hold and cradle hold are best represented in picture #3. One infant is placed in the cradle position. In this picture, the infant nursing on the right breast is in the cradle position. The infant nursing on the left breast is being held in the football hold position. Any of the positions shown can be used to nurse multiples. Different positions should be tried to find which are the most comfortable and provide easiest access for latching on by the infants.

**13. C:** An infant born to a mother who required a glucose infusion during labor is most likely to develop hypoglycemia within the first 24 hours of life. Once the infant is born, glucose is received through production of it in the liver, breastmilk, or a breastmilk substitute. Insulin levels would be elevated in the infant due to the glucose infusion. These remain high after birth, which results in hypoglycemia. Hypoglycemia in the infant can result in injury to brain tissue. Most cases will resolve on their own, but a small number of infants will require glucose infusions to correct this imbalance.

**14. A:** Frequent latching is the most successful method of establishing relactation. It is most successful after at least 4 months of successful breast feeding with mature milk volume. Some infants will not latch on to the breast after a lapse in breastfeeding. It may be necessary to pump or hand express 8-12 times over a 24-hour period to attempt to restart lactation.

**15. C:** Once mature milk has developed, the breastfed infant should have at least 6 wet diapers per day. The frequency of wet diapers can be a measure of hydration. In the first few days following birth, infants will only have a couple of wet diapers daily. Once more mature milk is produced, the volume taken in will increase as will the frequency of wet diapers.

**16. D:** A unilateral cleft lip and palate results in the lip and soft/hard palates on one side to not join in full development, demonstrated in image E. These congenital malformations result in the lip and/or soft and hard palates from fully forming and closing as they should. This can occur on one side or both and will interfere with feeding and speech development. Surgical correction is necessary to close the gap in the lip and/or palate.

**17. B:** Trying to nurse the infant while he is in an upright position will help to decrease the symptoms of acid reflux. If the infant is held in a football, cradle, or side-lying position, the symptoms of acid reflux may be increased due to the level position of the body and the likelihood of acid washing up into the esophagus. Other measures that can decrease the incidence of GERD