

## Oral Intake During Labor

### Description/Etiology

It has long been accepted practice to withhold food and drink from laboring women in order to prevent aspiration in women who require general anesthesia for delivery (e.g., during cesarean section). This policy originated with Curtis L. Mendelson's 1946 study on gastric acid aspiration. The onset of signs and symptoms of gastric acid aspiration (e.g., coughing, wheezing, cyanosis, fever) usually occurs within minutes of general anesthesia administration, and aspiration can cause hypoxia, chemical pneumonitis, and respiratory failure. At the time of Mendelson's study, aspiration was a common complication of general anesthesia in delivery, but with the use of medications (e.g., H<sub>2</sub>-receptor antagonists, antacids) and the rapid sequence induction (RSI) technique (i.e., rapid induction of sedation and tracheal intubation) it is now extremely rare. With these improvements, the practice of fasting by women experiencing labor is now being questioned by clinicians.

Pregnant women have increased energy requirements, requiring an average increase of 340 calories/day during the second trimester and 560 calories/day during the third trimester. At full term, pregnant women increase their glucose intake by ~ 16% in order to meet their nutritional needs. Because of this increase in energy utilization, pregnant women are not able to go without food for as long as non-pregnant women. For example, fasting by a non-pregnant woman causes hypoglycemia (i.e., a blood glucose level of < 70 mg/dL) and ketosis (i.e., elevated ketones in the blood or urine as a result of depleted glycogen stores) after 24–36 hours, but produces the same results within 16 hours in a pregnant woman; this is referred to as accelerated starvation. Forty percent of women in normal labor test positive for urinary ketones.

Once aspiration risk has been assessed, recommendations can be made regarding whether or not to allow oral intake during labor on a case-by-case basis. If fasting is required, the laboring woman should be monitored closely for signs and symptoms of hypoglycemia and ketosis.

### Facts and Figures

Anesthesia accounts for less than 3% of maternal deaths worldwide. Most of those deaths are related to complications of intubation (e.g., laryngospasm, unrecognized esophageal intubation, inability to secure the airway) in the general anesthesia used for about 10% of cesarean deliveries (Sobhy et al., 2016).

### Risk Factors

Risk factors for aspiration include chronic disease, hypertension, preeclampsia, neurologic disorders, gastritis, ulcers, prior abdominal surgery, esophageal disease, obesity, or factors that complicate intubation.

### Signs and Symptoms/Clinical Presentation

During prolonged labor, patients who are fasting can become fatigued and listless, experience increased vomiting, and/or show signs of anxiety, which are associated with a higher incidence of fetal distress and lower Apgar score at birth. Headache, vomiting, lethargy, fatigue, confusion, cold hands and feet, and seizures can indicate hyponatremia or

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ketosis. Hypoglycemia can cause heart palpitations, visual disturbances, sweating, and loss of consciousness.

## **Nutritional Assessment**

### › **Patient Medical History**

- Assess risk factors for aspiration
- Ask about onset of signs and symptoms (e.g., nausea, anxiety, fatigue) in order to evaluate the benefit of oral dietary intake

### › **Physical Findings of Particular Interest**

- Headache, vomiting, lethargy, fatigue, confusion, cold hands and feet, heart palpitations, and seizures might be present, indicating hyponatremia, hypoglycemia, or ketosis

### › **Patient Dietary History**

- Take a 24-hour diet history (i.e., patient recall of all foods and beverages consumed in a 24-hour period) to assess for nutrient inadequacies and aid in the assessment of risk of hypoglycemia and/or ketosis

### › **Laboratory and Diagnostic Tests of Particular Interest to the Nutritionist**

- CBC with Hgb and Hct will assess for anemia, malnutrition, and infection. The reference values for the lower limits of Hgb and Hct are adjusted during pregnancy: Hct is 32% (37% for non-pregnant women) and Hgb is 11 g/dl (12 g/dl in nonpregnant women)
- Urine test for proteins, ketones, and glucose will screen for hypoglycemia, diabetes, and ketosis
- Blood glucose testing will screen for diabetes or hypoglycemia

## **Treatment Goals**

### › **Promote Optimal Labor and Delivery and Reduce Risk for Complications**

- Review diet history to assess for calorie or nutrient weakness before labor. Recommend oral dietary intake, as appropriate and in accordance with facility protocols and clinician orders
- Assess pregnant patient's anxiety level and coping ability; provide emotional support and educate about clinician assessment and recommendation for oral intake during labor and the risks and benefits of oral intake during labor

## **Food for Thought**

- › Withholding food from women in labor can increase risk for hypoglycemia and ketosis, and can reduce the laboring woman's energy for bearing down, increasing the need for forceps- or vacuum-assisted delivery

## **Red Flags**

- › Headache, vomiting, lethargy and fatigue, confusion, cold hands and feet, or seizures could indicate hyponatremia or ketosis

## **What Do I Need to Tell the Patient/Patient's Family?**

- › For women identified at increased risk for pulmonary aspiration (for details, see *Risk Factors*, above), educate on the rationale for remaining NPO
- › If approved by the treating clinician, allow a laboring woman assessed at low aspiration risk to self-regulate intake
- › Explain that excess water consumption can result in hyponatremia, but that carbohydrate drinks (e.g., Gatorade) are acceptable
- › Educate that there is a possibility of increased vomiting with oral intake during labor

## **Discharge Planning**

- › Eat a calorie-appropriate diet that includes lean proteins, unsaturated fats (including omega-3), complex carbohydrates (e.g., whole grains), legumes, nuts and seeds, and a variety of fruits and vegetables
- › Take dietary supplements as prescribed
- › Participate in regular moderate physical activity of at least 150 minutes each week, when medically appropriate

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## References

1. American College of Nurse-Midwives. (2016). Providing oral nutrition to women in labor. *Journal of Midwifery & Women's Health*, 61(4), 528-534. doi:10.1111/jmwh.12515
2. Perry, S. E., Hockenberry, M. J., Lowdermilk, D. L., & Wilson, D. (Eds.). (2010). In *Nursing care during labor and birth. Maternal child nursing care* (4th ed., pp. 456-459). Maryland Heights, MO: Mosby Elsevier.
3. Shea-Lewis, A., Eckardt, P., & Stapleton, D. (2018). CE: Original Research: An investigation into the safety of oral intake during labor. *American Journal of Nursing*, 118(3), 24-31. doi:10.1097/01.NAJ.0000530913.80349.53
4. Sobhy, S., Zamora, J., Dharmarajah, K., Arroyo-Manzano, D., Wilson, M., Navaratnarajah, R., & Thangaratinam, S. (2016). Anaesthesia-related maternal mortality in low-income and middle-income countries: A systematic review and meta-analysis. *Lancet Global Health*, 4(5), e320-e327. doi:10.1016/S2214-109X(16)30003-1
5. Sperling, J. D., Dahlke, J. D., & Sibai, B. M. (2016). Restriction of oral intake during labor: Whither are we bound? *American Journal of Obstetrics and Gynecology*, 214(5), 592-596. doi:10.1016/j.ajog.2016.01.166
6. Tillet, J., & Hill, C. (2016). Eating and drinking in labor: Reexamining the evidence. *Journal of Perinatal & Neonatal Nursing*, 30(2), 85-87. doi:10.1097/JPN.000000000000168