

Category, Priority and Referral	Category	Priority	Referral
	PREGNANT WOMEN	1	-
	BREASTFEEDING WOMEN	1	-
	NON-BREASTFEEDING WOMEN	6	-

Definition

History of preterm and/or early term delivery is defined as follows (1, 2):

- Preterm: Delivery of an infant born less than or equal to (\leq)36 6/7 weeks.
- Early Term: Delivery of an infant born greater than or equal to (\geq)37 0/7 weeks and less than or equal to (\leq)38 6/7 weeks (also known as less than <39 weeks).

Pregnant Women: any history of preterm or early term delivery

Breastfeeding/Non-breastfeeding: most recent pregnancy

Required Documentation

Documentation of DOB, EDD, or history of preterm or early term delivery

Justification

Women with a history of preterm delivery have an increased risk of spontaneous preterm delivery in a subsequent pregnancy compared to women with no history of prior spontaneous preterm delivery (3). Prior spontaneous preterm delivery is highly associated with recurrence in subsequent pregnancies. A history of one previous preterm birth is associated with a recurrent risk of 17-37%; the risk increases with the number of prior preterm births and decreases with the number of term deliveries (4).

Typically a pregnancy lasts about 40 weeks. Premature or preterm birth, however, is defined as a birth that occurs between 20 and 37 weeks of pregnancy, according to the American College of Obstetricians and Gynecologists (ACOG) (5). In the past, the period from 3 weeks before until 2 weeks after the estimated date of delivery was considered a "term" pregnancy, with the expectation that a baby would have similar health outcomes if they were born any time during this interval. In 2013, ACOG released a committee opinion that the label "term" should be replaced with the designations *early term* (\geq 37 0/7 weeks and \leq 38 6/7 weeks gestation) and *full term* (\geq 39 0/7 weeks and \leq 40 6/7 weeks gestation) to more accurately describe these groups of infants (1).

Preterm Delivery

Prematurity affects about 12% of all live births in the U. S., and about 50% of these preterm births were preceded by preterm labor (6). In 2011, the annual rate of premature births in the United States reached 11.7%, nearly two times the rate in European nations (6). Preterm births also account for approximately 70% of newborn deaths and 36% of infant deaths (5).

Despite advances in neonatal care, preterm birth remains a leading cause of infant death in the United States (7). More infants die from pre-term related problems than any other single cause (6). Preterm birth strains society's healthcare resources due to its long-term effects on the health of the newborn

(6). Premature infants may have physical problems that have nutritional implications, including immature sucking, swallowing and immature digestion and absorption of carbohydrates and lipids (7). Preterm infants are at risk for a number of illnesses/health conditions that range from minor to severe complications depending on the circumstances. (See risk 142 *Preterm or Early Term Delivery* for more details.)

Several factors have been found to increase the risk of preterm delivery. Epidemiologic studies have consistently reported low socioeconomic status, nonwhite race, maternal age of ≤ 18 years or ≥ 40 years, and low pre-pregnancy underweight as risk factors (4). Studies suggest even modest restrictions in maternal nutrition around the time of conception can lead to premature births and long-term adverse health effects for offspring (8). Other factors associated with a risk of preterm birth may be identified before pregnancy, at conception, or during pregnancy include (8, 9):

- Low maternal weight gain during pregnancy
- Maternal infections
- Maternal hypertension
- Gestational diabetes
- Smoking
- Indoor pollution
- Maternal stress
- Poor housing quality
- Teen pregnancy
- Sexually transmitted diseases
- Low psychosocial health status
- Previous or present pregnancy complications
- Multiple fetuses
- Lack of perceived social support

A recent study indicated that maternal obesity is also an independent risk factor for preterm delivery (10). Complications associated with obesity (BMI ≥ 30) prior to conception that increase the risk for preterm delivery include (11):

- Gestational Diabetes Mellitus
- Hypertension
- Preeclampsia
- Cesarean Delivery
- Postpartum weight retention

Additional concerns related to obesity include potential intrapartum, operative, and postoperative complications and difficulties related to anesthesia management. Obese women are also less likely to initiate and sustain breastfeeding (11).

Breastfeeding is recommended as the normative standard for infant feeding and nutrition for all infants, especially preterm babies. Breastfeeding preterm infants has been associated with positive health outcomes for these infants, including:

- Improved motor maturity and cognitive ability (12, 13, 14)
 - Reduced risk of necrotizing enterocolitis (15, 16)
 - Reduced risk of retinopathy of prematurity and retinal detachment (17)
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Additionally, mothers of preterm infants produce milk that is designed to meet the baby's particular needs during the first few weeks of breastfeeding. It is higher in protein and minerals, such as salt, and contains different types of fat that the baby will be able to digest and absorb more easily compared to the milk of mothers of full term babies. The fat in human milk also helps to enhance the development of the baby's brain and neurologic tissues, which is especially important for premature infants. Human milk is also easier for babies to digest than formula and avoids exposing the baby's immature intestinal lining to the cow's milk proteins found in premature infant formula. Preterm infants who are breastfed are less likely to develop intestinal infections than babies who are formula fed, and the colostrum produced in the first few days contains high concentrations of antibodies that will also help the baby fight infection. (16)

Breastfeeding preterm infants, especially if they are in the NICU, may present unique challenges for breastfeeding dyads. These mothers will benefit from extra breastfeeding support due to the delay of direct breastfeeding, reliance on breast pumps, and the stress of having a sick newborn. Even if the baby cannot breastfeed directly from the breast at first, the mother can be encouraged to express her milk to ensure that her supply is maintained. Supportive care for infants in the NICU may include the use of a feeding tube. Expressed human milk can be passed through the tube, so it is important for the mother to discuss her feeding decisions with her baby's doctor.

Early Term

Up to 10% of babies in the United States are scheduled for early term deliveries via labor-inducing medication or cesarean section before 39 weeks of gestation despite neither the mother nor the baby being at risk if the pregnancy continues (18). Elective deliveries like this are sometimes requested for reasons such as wanting to schedule the date of the infant's birth, physician preference, or for relief of symptoms at the end of the pregnancy (18).

Research shows that a fetus will experience a significant amount of development and growth of the lungs, brain, and liver between 37 and 39 weeks of gestation. The brain develops at its fastest rate at the end of the pregnancy, at a rate of up to one third between weeks 35 and 39. Additionally, layers of fat are added under the infant's skin during the last few weeks of pregnancy which helps them keep warm after birth. According to ACOG, non-medically warranted deliveries prior to 39 weeks should be avoided (19). Early term delivery puts an additional strain on society as the early term infant will likely require a longer hospital stay and may have long term healthcare needs (18). Factors that can increase the risk of woman delivering an early term infant are the same and are stated above for preterm birth.

When a woman delivers an early term infant or chooses an early elective delivery, she is at increased risk for postpartum depression, cesarean delivery, and other complications requiring longer hospital stays (18). Steps pregnant women can take in order to decrease the prevalence of pre-term births include (18):

- Seek regular prenatal care throughout pregnancy.
 - Maintain a healthy diet, including daily prenatal vitamins.
 - Cease consumption of alcohol, drugs, or other dangerous toxins during pregnancy.
 - Avoid stress.
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- Contact their health care provider with all questions or concerns.

Pregnant women who come from low or inadequate income households are at a greater risk for poor physical and mental health due to poor eating habits. WIC services may assist women at risk of preterm and early term births by providing them with proper nutrition.

Implication for WIC Nutrition Services

Early prevention is the primary way to stop preterm labors. WIC can assist in reducing preterm deliveries by increasing prevention strategies. WIC can improve outcomes through:

- Recommending healthy maternal weight gain and providing nutrition education that addresses the WIC food package and other healthy foods that contribute to a balanced diet.
- Promoting early and regular prenatal care.
- Encouraging use of prenatal vitamins, as prescribed by the health care provider.
- Recommending adherence to Dietary Guidelines for Americans.

WIC staff may find the below listed resources helpful in providing nutrition counseling:

- *Additional Considerations for Some Adults-Physical Activity for Women During Pregnancy and the Postpartum Period*.
<http://health.gov/paguidelines/guidelines/chapter7.aspx> .
- *Women, Infants, and Children-About WIC, How WIC Helps*:
<http://www.fns.usda.gov/wic/about-wic-how-wic-helps> .
- *WIC Works Resource Systems*: <https://wicworks.fns.usda.gov/> .

References

1. American College of Obstetricians and Gynecologists. Definition of term pregnancy. Committee Opinion No.579. *Obstet Gynecol*. 2013 Nov;122:1139-40.
 2. Ob-Gyns redefine meaning of “term pregnancy” [Internet]. Washington, DC: American College of Obstetricians and Gynecologists; c2013 [updated 2013 Oct 22; cited 2016 Dec 6]. Available from: <http://www.acog.org/About-ACOG/News-Room/News-Releases/2013/Ob-Gyns-Redefine-Meaning-of-Term-Pregnancy>.
 3. Mercer M, Moawad A, Meis P, Iams JD, Das A, Caritis SN. The preterm prediction study: effect of gestational age and cause of the preterm on subsequent obstetric outcome. *Am J Obstet Gynecol*. 1999 Nov;181:1219-21.
 4. Hoffman HJ, Bakketeig LS. Risk factors associated with the occurrence of preterm birth. *Clin.Obstet.Gynecol*. 1984; 27:539-52.
 5. ACOG.org [Internet]. Washington DC: The American College of Obstetricians and Gynecologists: c2016 [updated 2016 Nov; cited 2016 Dec 6]. Available from: <http://www.acog.org/Patients/FAQs/Preterm-Premature-Labor-and-Birth>
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6. Dag M, Lie TR, Markestad T. Long-term medical and social consequences of preterm birth. *N Engl J Med*. 2008 Jul 17. Web. 07 Apr. 2014.
 7. Iams JD. Prevention of preterm parturition. *N Engl J Med*. 2014;370(3):254-261.
 8. Wang P, Liou S, Cheng C. Prediction of maternal quality of life on preterm birth and low birthweight: a longitudinal study. *BMC Pregnancy and Childbirth* [serial online]. June 2, 2013;13:124. Available from: MEDLINE, Ipswich, MA. Accessed April 28, 2014.
 9. Ludwig JD, Miller M. Interpreting the WIC rebate. *J Pol Anal Manage*. 2005; 24(4):691-701.
 10. Cnattingius S, Villamor E, Johansson S, Edstedt, Bonamy AK, Persson M, et al. Maternal obesity and risk of preterm delivery. *JAMA* 2013 Jun 12:309(22).
 11. American College of Obstetricians and Gynecologists. Practice Bulletin. OPbesity in pregnancy. Dec. 2015.
 12. Feldman R, Eidelman A. Direct and indirect effects of breast milk on the neurobehavioral and cognitive development of premature infants. *Developmental Psychobiology*. 2003 Sept;43(2):109-19.
 13. Vohr B, Poindexter B, Dusick A, McKinely LT, Higgins RD, Langer JC, Poole KW. Persistent beneficial effects of breast milk ingested in the neonatal intensive care unit on outcomes of extremely low birth weight infants at 30 months of age. *Pediatrics*. 2007 Oct;120(4):e953-59.
 14. Blaymore Bier J, Oliver T, Ferguson AE, Vohr B. Human Milk Improves Cognitive and Motor Development of premature infants during infancy. *J Hum Lact*. 2002 Nov;18(4):361-67.
 15. Boyd CA, Quigley MA, Brocklehurst P. Donor breast milk versus infant formula for preterm infants: systematic review and meta-analysis. *Arch Dis Child Fetal Neonatal Ed*. 2007 May;92:F169-75.
 16. Healthychildren.org [Internet]. Elk Grove Village: American Academy of Pediatrics; c2011 [updated 2015 Nov 21; cited 2016 Dec 6]. Available from: <https://www.healthychildren.org/English/ages-stages/baby/breastfeeding/Pages/Providing-Breastmilk-for-Premature-and-Ill-Newborns.aspx> .
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17. Okamoto T, Shirai M, Kokubo M, Takahashi S, Kajino M, Takase M, Sakata H, Oki J. Human milk reduces the risk of retinal detachment in extremely low-birthweight infants. *Pediatr Int.* 2007 Oct;49(6):894-897.

 18. National Institute for Health Care Management. Born too early-improving maternal and child health by reducing early elective deliveries. NIHCM Issue Brief, March 2014. [cited 2016 Dec 6]. Available from: http://www.nihcm.org/pdf/Early_Elective_Delivery_Prevention_Brief_2014.pdf.

 19. Elective delivery before 39 weeks [Internet]. Washington, DC: American College of Obstetricians and Gynecologists; c2013 [updated 2013 June; cited 2016 Dec 6]. Available from: <http://www.acog.org/Patients/FAQs/Elective-Delivery-Before-39-Weeks>.
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