



## **Elective Delivery Recommendations**

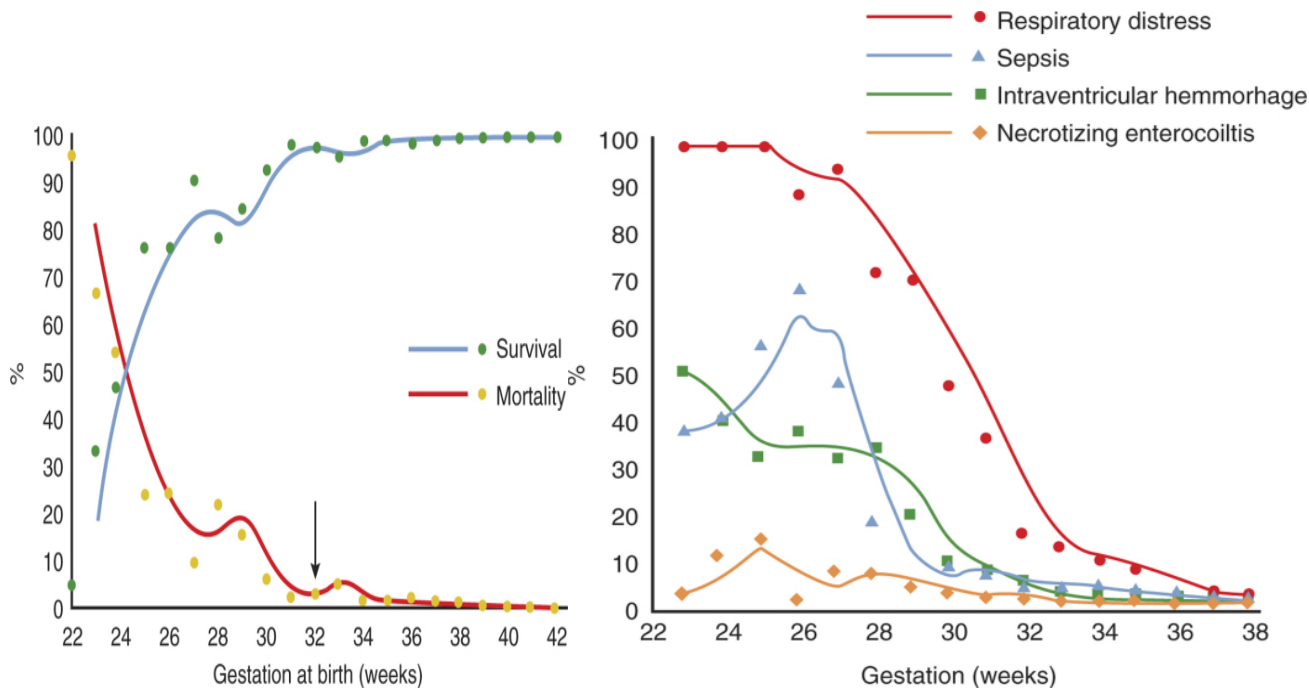
### **RATIONALE**

The rate of preterm birth in the United States has been rising over the last 15 years. Nationally, preterm birth affects 12% of all babies delivered in the United States or approximately 480,000 births. In the last decade, preterm birth has increased by 27% in the United States and accounts for 85% of all perinatal morbidity and mortality. Preterm birth is the leading cause of perinatal morbidity and mortality. Although the vast majority of these deliveries result from spontaneous preterm labor, an alarming and growing number of babies are being admitted to the neonatal intensive care unit due to morbidities associated with prematurity resulting from an iatrogenic and preventable cause, elective (without medical obstetric indication) inductions followed by vaginal delivery, Cesarean sections as a result of failed preterm inductions, or elective Cesarean sections prior to 39 weeks of gestation. The frequency of labor induction nationally has increased dramatically over the past 20 years, from an incidence of 9% in 1989 to 21% in 2004, according to the National Center for Health Statistics. The increase in inductions is thought to be due to several factors, including an increase in elective inductions/deliveries either due to patient preference, physician practice style, or the practice of defensive medicine. Intervention resulting in delivery should follow the risk vs. benefit paradigm where the potential risks of delivery should be significantly less than continuing the pregnancy.

### **RECOMMENDATIONS**

- To prevent iatrogenic prematurity, fetal pulmonary maturity should be confirmed before scheduled delivery at less than 39 weeks of gestation unless fetal maturity can be inferred from any of the following historic criteria:
  - Ultrasound measurement at less than 20 weeks of gestation supports gestational age of 39 weeks or greater.
  - Fetal heart tones have been documented as present for 30 weeks by Doppler ultrasonography.
  - It has been 36 weeks since a positive serum or urine human chorionic gonadotropin pregnancy test result.
- Reasons such as maternal request, availability of effective pain management, provider convenience, or facility scheduling are not medically justifiable indications for elective delivery (without medical obstetric indication) prior to an accurately determined gestational age of 39 weeks or documentation of fetal lung maturity.
- Elective deliveries, regardless the route (vaginal or Cesarean) should not be performed before gestational age of 39 weeks has been accurately determined unless there is documentation of fetal lung maturity.
- Testing for fetal lung maturity should not be performed, and is contraindicated, when delivery is mandated for fetal or maternal indications.
- A mature fetal lung maturity test result before 39 weeks of gestation, in the absence of appropriate clinical reason, is not an indication for delivery.

- Respiratory distress syndrome, intraventricular hemorrhage, necrotizing enterocolitis, and other complications have been reported in premature newborns delivered with mature lecithin (phosphatidylcholine)/sphingomyelin ratios or the presence of phosphatidylglycerol.



- Perinatal mortality and gestational age. (Modified from Mercer BMM: Preterm premature rupture of the membranes. *Obstet Gynecol* 101:178, 2003.)
- Survival and mortality rates for 8,523 infants born in 1997 to 1998 at a single U.S. center. (From Mercer BMM: Preterm Premature rupture of the membranes. *Obstet Gynecol* 101:178, 2003.)

### Cautions When Using Ultrasound to Establish Gestational Age

- In general, ultrasound-established dates should take preference over menstrual dates when the discrepancy is greater than 7 days in the first trimester and greater than 10 days in the second trimester.
- Ultrasonography may be considered to confirm menstrual dates if there is a gestational age agreement within 1 week by crown rump measurements obtained in the first trimester or within 10 days by an average of multiple fetal biometric measurements obtained in the second trimester (up to 20 weeks of gestation).
- Reassigning gestational age in the third trimester should be done with caution because the accuracy of ultrasonography is within 3- 4 weeks.
- Before 6 weeks of gestation, dating can be done by measurement of the gestational sac, which is visible as early as 4 weeks of gestation and certainly by the fifth week of gestation. The mean sac diameter, which is the average of three measurements of the gestational sac, can accurately estimate gestational age (mean sac diameter [mm] + 30 = gestational age [days]).

- Maximum embryo length at 6 - 10 weeks of gestation and crown rump length, which represents the maximum length of the fetus from the top of the head to the rump region, are the most accurate at determining gestational age. When the crown rump length exceeds 60 mm, dating of pregnancy can be accomplished by other biometric parameters, such as measurement of the biparietal diameter, head circumference, femur length, and abdominal circumference.
- The head circumference is the most predictive parameter of gestational age between 14 - 22 weeks of gestation because it predicts gestational age by 3.4 days. Combining various parameters improves the prediction of gestational age slightly over the use of head circumference measurement alone.
- Formulas derived from singleton data can be used to determine gestational age in twins and triplets.
- In the third trimester, the best single measurement of gestational age based on fetal biometry is the femur length. However, reported accuracy of femur length ranges from 1 week in the second trimester to 3 - 4 weeks at term.
- Guidelines for assignment of gestational age when a discrepancy exists between menstrual and ultrasound-established dates vary in different ultrasound units. Interval growth scans are commonly used to assign a gestational age. Consultation with a maternal fetal medicine provider should be considered in order to determine the appropriate time for delivery due to known risks in delivering a baby preterm or postterm.

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