Florida Perinatal Quality Collaborative

AT THE LAWTON AND RHEA CHILES CENTER FOR HEALTHY MOTHERS AND BABIES

Partnering to Improve Health Care Quality for Mothers and Babies

Literature E-Bulletin on Non-Medically Indicated Deliveries <39 Weeks Gestation

Dear Perinatal Care Providers: Below is a list of recent literature on the issue of non-medically indicated deliveries <39 weeks gestation, provided to you by the Florida Perinatal Quality Collaborative through the generous support of a grant from the March of Dimes. You can click on the hyperlinked references and go directly to the PubMed abstract for the articles to access available full text articles. If you have any questions, please contact us at fpqc@health.usf.edu or by phone at 813-974-8888.

Bates, E, Rouse, DJ, Mann, ML, Chapman, V, Carlo, WA, Tita, AT. Neonatal outcomes after demonstrated fetal lung maturity before 39 weeks of gestation. *American Journal of Obstetrics & Gynecology*. 2010;116(6):1288-1295.

This was a retrospective cohort study of women with singleton pregnancy delivered at 36 0/7-38 6/7 weeks after positive fetal lung maturity testing from 1999-2008. Measurement was done by using a composite neonatal outcome that included death, adverse respiratory outcomes, hypoglycemia, treated hyperbilirubinemia, generalized seizures, necrotizing enterocolitis, hypoxic ischemic encephalopathy, periventricular leukomalacia and suspected or proven sepsis. The study looked at 459 neonates that were delivered at 36-38 weeks. Results found that the risk of composite adverse neonatal outcome was 6.1% for the 36-38 week group compared to 2.5% for the 39-40 week group. Additional analysis found that early delivery was significantly associated with increased risk of the composite outcome and several individual outcomes including RDS (OR 7.6), treated hyperbilirubinemia (OR 11.2) and hypoglycemia (OR 5.8).

Clark, SL, Frye, DR, Meyers, JA, Belfort, MA, Dildy, GA, Kofford, S, Englebright, J, Perlin, JA. Reduction in elective delivery at <39 weeks of gestation: comparative effectiveness of 3 approaches to change and the impact on neonatal intensive care admission and stillbirth. *American Journal of Obstetrics & Gynecology*. 2010;203:449.e1-6.

This was a retrospective cohort study of 27 hospitals. The study aimed to see the effect of hospital policies to reduce elective early term deliveries on newborn intensive care unit admissions and stillbirths. The study looked at the outcomes of hospitals that had implemented 1 of 3 strategies to eliminate early term elective deliveries. The results of the study found that elective early term delivery was reduced from 9.6%-4.3%, and the rate of term neonatal intensive care admissions fell by 16%. The study found no increase in stillbirths. Results suggest that hard stop hospital policies are more effective than physician education or the adoption of policies backed only by peer review and that the greatest improvement was observed when elective deliveries <39 weeks were prohibited by hospital personnel and oversight.

Clark, SL, Meyers, JA, Perlin, JB. Oversight of elective early term deliveries: avoiding unintended consequences. *American Journal of Obstetrics and Gynecology.* 2012;206(5):387-389.

This editorial discussed the recent national movement to eliminate elective delivery at <39 weeks gestation and the potential pitfalls that should be considered when developing and enforcing policies and conducting compliance monitoring. The authors suggest that when developing policies, the policies should clearly state that they are designed specifically for elective early term deliveries with no valid medical indications. This would leave no room for confusion among providers who may interpret such policies as applying to early term deliveries that may be medically necessary. Additionally when enforcing policies, the authors suggest that a hard stop policy in which elective deliveries can't be scheduled is the most effective. However, the authors recognize that indications for early deliveries can be ambiguous and subjective and can be potential causes for controversy among hospitals and providers. It is suggested that any hospital taking a hard stop approach should also establish a chain of command that is available to resolve any such issues that arise. Finally, the authors recognize that data collection of this process is important and that actions should be taken to monitor compliance with policies.

Dietz, PM, Rizzo, JH, England, LJ, Callaghan, WM, Vesco, KK, Bruce, FC, Bulkley, JE, Sharma, AJ, Hornbrook, MC. Early term delivery and health care utilization in the first year of life. *The Journal of Pediatrics.* 2012;161(2):234-239.

This study looked at health care utilization of 22,420 singleton infants born 37-42 weeks between 1998 and 2007. Outcomes studied were duration of hospital stays, post-delivery re-hospitalizations and sick/emergency room visits in the first year of life. Results showed that 20.9% of term infants were born early and that infants delivered vaginally at 37 weeks had a 2.2 greater odds of staying 4+ days in the hospital compared with those born at 39-40 weeks. Infants born at 37 weeks also had an increased risk of being re-hospitalized and infants born at 37 or 38 weeks had a higher mean number of sick/emergency room visits. The authors concluded that early term-born infants had greater health care utilization in the first year of life when compared to infants born at 39-40 weeks.

Laughon, SK, Reddy, UM, Sun, L, Zhang, J. Precursors for late preterm birth in singleton gestations. *Obstetrics and Gynecology.* 2010; 116(5):1047-1055.

This was a retrospective, observational study that compared infants born late preterm with infants born between 37 0/7 and 41 6/7 weeks. The authors looked at precursors of late preterm birth and the incidences of neonatal morbidities and perinatal mortalities in relation to gestational age. The study found that precursors to late preterm birth were spontaneous labor, preterm PROM, "indicated" (obstetric, maternal, or fetal condition) and unknown. The precursor unknown was comprised of elective reasons (19.1%) or having no obstetric, maternal or fetal conditions (80.9%). Different precursors were associated with varying incidences of neonatal morbidity. Neonatal morbidity and mortality were increased compared with delivery ≥37 weeks. Respiratory morbidity, neonatal sepsis, admission to the NICU and length of NICU stay all decreased with advancing gestational age. The authors concluded that a significant number of late preterm births were likely avoidable and that elective deliveries should not be scheduled until 39 weeks of gestation.

Ehrenthal, DB, Hoffman, MK, Jiang, X, Ostrum, G. Neonatal outcomes after implementation of guidelines limiting elective delivery before 39 weeks of gestation. *Obstetrics and Gynecology.* 2011; 118(5):1047-1055.

This was a retrospective cohort study designed to estimate the effect of institutional policy limiting elective delivery <39 weeks on neonatal outcomes at a large community-based academic center. Neonatal outcomes were assessed before and after policy implementation. Data were collected from hospital obstetric records. The study found that the percentage of deliveries <39 weeks decreased after policy implementation with the greatest difference for women undergoing repeat cesarean delivery or induction of labor. Results of the study identified a significant decrease in NICU admissions and an increased odds of birth weight >4000g. A slight, non-significant increase in stillbirths at 37 and 38 weeks was found as well. The authors concluded that a policy limiting elective delivery before 39 weeks was followed by changes in the timing of term deliveries, a reduction in NICU admission and an increase in macrosomia and stillbirth.

Oshiro, B, Branch, W, Main, E. Letters to the editor: Neonatal outcomes after implementation of guidelines limiting elective delivery before 39 weeks of gestation. *Obstetrics and Gynecology.* 2012;119(3):656.

Oshiro, Branch and Main responded to the findings of the Ehrenthal, Hoffman, Jiang and Ostrum article "Neonatal outcomes after implementation of guidelines limiting elective delivery before 39 weeks of gestation". The authors cautioned that Ehrenthal's finding of increased stillbirths may be due to a short observation period and changing demographics which would lead to natural fluctuations in stillbirth rates. They also note that 5 out of 11 stillbirths identified in the study were associated with maternal or fetal complications that would have classified the pregnancy as high risk and therefore early delivery of these patients would not be considered elective according to guidelines. They go on to discuss the serious long-term implications associated with early term deliveries and note that these concerns need to be considered in relation to a non-significant increase in stillbirths. While Oshiro, Branch and Main agree with Ehrenthal, Hoffman, Jiang and Ostrum that it is important to monitor the outcomes of the intervention, they also note that it is important to weigh the perinatal and post-neonatal outcomes when considering delivery before 39 weeks.

Benedetti, TJ, Cawthon, L, Thompson, J. Letters to the editor: Neonatal outcomes after implementation of guidelines limiting elective delivery before 39 weeks of gestation. *Obstetrics and Gynecology.* 2012;119(3):656.

Benedetti, Cawthon and Thompson responded to the findings of the Ehrenthal, Hoffman, Jiang and Ostrum article "Neonatal outcomes after implementation of guidelines limiting elective delivery before 39 weeks of gestation". They discussed their experiences in Washington state with 44 hospitals that have been participating in a statewide quality initiative to reduce elective deliveries at 37 0/7-38 6/7 weeks. Additionally, Washington Medicaid has a 39-week elective delivery indicator as a pay-for-performance. The authors noted that their data set was larger than Ehrenthal's and that their results show a significant reduction in overall early-term delivery and no stillbirth or low Apgar score increase associated with the reduction. The authors recognize that more studies are needed to look into the association of stillbirth with implementation of guidelines to limit elective delivery before 39 weeks; but, they emphasize that, thus far, their state has seen no such evidence of an association.

Tita, AT, Owen, J. Letters to the editor: Neonatal outcomes after implementation of guidelines limiting elective delivery before 39 weeks of gestation. *Obstetrics and Gynecology.* 2012;119(4):870-871.

Tita and Owen responded to the findings of the Ehrenthal, Hoffman, Jiang and Ostrum article "Neonatal outcomes after implementation of guidelines limiting elective delivery before 39 weeks of gestation". Tita and Owen noted that the stillbirth finding should be considered with caution for certain reasons. Results for the other outcomes, but not for stillbirth, were adjusted for differences in characteristics (ethnicity and medical comorbidities). Additionally, the increase in stillbirths that were associated with the policy was not a significant increase when unadjusted. It was noted that policies to reduce deliveries before 39 weeks specifically target women that have no medical indications for early delivery. Tita and Owen suggest that the authors of the study should have excluded women with comorbidities that are associated with an increased risk of stillbirth in their analysis. Finally, Tita and Owen point out that comparative data on neonatal deaths are crucial to interpreting stillbirths. Neonatal deaths are decreased at 39-40 weeks compared with delivery at 37-38 weeks. They note that it is important to thoroughly monitor the effect of policies and initiatives to prevent non-medically indicated deliveries before 39 weeks; but, they also note that the findings of the Ehrenthal study should not prevent pursuing that goal.

Anadkat, JS, Kuzniewicz, MW, Chaudhari, BP, Cole, FS, Hamvas, A. Increased risk for respiratory distress among white, male, late preterm and term infants. *Journal of Perinatology.* 2012:1-6.

This was a cohort study designed to determine the relationship between respiratory distress syndrome in late preterm infants and race/ethnicity and sex. The authors studied the risk of RDS and its associations with sex and race/ethnicity in infants born 34-42 weeks between 2000 and 2009. The study found that male sex and white race independently increased the risk for RDS regardless of gestational age. Additionally, in white males born before 39 weeks, operative delivery, maternal diabetes and chorioamnionitis increased the risk of RDS. The authors concluded that male sex and white race independently increase the risk for RDS in late preterm and term infants. The authors speculated that differences in hormonal regulation of lung development may account for the relationship between male sex and risk of RDS.

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