

Factors that influence the choice for neonatal resuscitation in periviable deliveries

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Abstract

BACKGROUND: Periviable preterm birth, defined as delivery between 20+0/7 to 25+6/7 weeks, represents less than 1% of all births but contributes to up to 40% of all infant deaths. Scenarios with high risks of morbidity and mortality to the maternal-neonatal dyad may result in periviable preterm delivery. These situations require shared decision making between healthcare teams and families to decide whether maternal and neonatal patients are candidates for obstetric interventions and neonatal resuscitation at delivery, respectively, and to determine the optimal mode of delivery at the cusp of fetal viability.

OBJECTIVE: The primary objective is to describe the influence of patient demographics (i.e. maternal race) and societal factors (i.e. maternal religion) on the decision between neonatal resuscitation and comfort care in periviable deliveries. Our secondary goals are: 1. to quantify the use of obstetric interventions (antenatal steroids for fetal lung maturity, magnesium sulfate for fetal neuroprotection, tocolytics and GBS prophylaxis) at the threshold of viability and 2. to establish whether planned neonatal resuscitation versus comfort care influenced the choice of cesarean versus vaginal delivery.

METHODS: This project is a retrospective cohort study; electronic medical records were queried for data at Ascension St. Vincent Women's Hospital of mothers and neonates delivered at 22 0/7 to 24 6/7 from January 1, 2016 to July 31, 2020. Study patients were separated to compare outcomes between those that received neonatal resuscitation and those for whom comfort care was provided at 22, 23, and 24 weeks gestational age. Results were further stratified by obstetric interventions, mode of delivery, and maternal race and maternal religion with statistical analysis utilizing Fisher's Exact Test.

RESULTS: Of the 111 patient charts originally identified, 73 patients met inclusion criteria. For those patients that opted for obstetric interventions, the most likely intervention was antenatal steroids (86%), followed by magnesium for fetal neuroprotection (63%) and tocolytics (63%), with the least likely intervention being Group Beta Streptococcus antibiotic prophylaxis (43%). The overall cesarean delivery rate was 53%. Cesarean delivery was selected with increasing gestational age: 9.1%, 52%, and 67% at 22, 23, and 24 weeks respectively. While there was no significant difference in those that opted for comfort care versus neonatal resuscitation at 22 weeks, the majority of patients at 23 and 24 weeks overwhelmingly opted for resuscitation; 5 infants (45%) were resuscitated at 22 weeks, 24 infants (96%) at 23 weeks, and 36 infants (97%) at 24 weeks. Planned neonatal resuscitation increased by gestational age. Patients opting for comfort care were more likely to deliver vaginally (87%) versus those that opted for resuscitation (41%), (Fisher's Exact Test, p=0.02), with the most

common diagnoses documented for cesarean delivery being malpresentation followed by fetal distress. As for the influence of maternal race, African American patients opted for resuscitation 100% of the time, regardless of gestational age, in comparison to Caucasian (87%) and “other” (62%) counterparts. As for maternal religion, there was no significant difference between patients that self-identified as Christian, Roman Catholic, Unaffiliated or Other and their decision for neonatal resuscitation at 22 weeks. However, at 23 and 24 weeks, the only patients to opt in favor of comfort care were patients that were Unaffiliated with an organized religion. Overall, our infant survival rates were 7.6%, 44%, 63%, at 22, 23, and 24 weeks respectively, with an overall survival rate of 41%.

CONCLUSION: While the decision to resuscitate periviable preterm infants is multifactorial, demographic and societal factors influence the decision for planned resuscitation for this vulnerable patient population. Planned neonatal resuscitation rates were higher among patients identified as African American than other demographics included in this study. Patients not affiliated with an organized religion are less likely to opt for resuscitation at later gestational ages. Regardless of plans for resuscitation, the majority of patients received obstetric interventions including antenatal steroids and cesarean delivery. These findings may be used by clinicians for shared decision making during future antenatal counseling sessions.