Working with Obstetricians for Patient Safety: Preparation, Training and Communication

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About 10% of newborns will need some help with breathing at birth, and 1% require vigorous intervention. Full resuscitation including chest compressions and/or epinephrine administration is a rare event, occurring in 1-2/1000 live births. Ensuring a smooth transition during the first "golden hour" of life is a matter of patient safety for both mother and baby. Optimizing outcomes for the rare full neonatal resuscitation requires significant preparation, excellent communication and collaborative care before, during, and after birth by obstetric and pediatric care providers.

Anticipation and Preparation

Ongoing risk assessment during prenatal, antepartum and intrapartum care can identify many of the babies who will require special attention, including resuscitation during the neonatal period. Such identification and communication with the pediatric team allows neonatal care providers to be fully prepared and parents counseled and involved in decision-making regarding their baby. At least one person capable of initiating neonatal resuscitation and responsible for the newborn must be present for every birth. That person or someone else immediately available should have the skills to perform a complete resuscitation, including ventilation with bag and mask, endotracheal intubation, chest compressions, and administration of medications. Standards of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) state that resuscitative services must

be available throughout an organization and that qualifications of providers must be consistent with their responsibilities. Each hospital that offers perinatal services should have a program in place that ensures the competency of the resuscitation personnel through periodic credentialing. Thus, pediatricians who attend high risk deliveries and cesarean sections must be competent in the skills necessary for effective resuscitation. Merely attending an NRP (Neonatal Resuscitation Program) course every two years does *not* assure competency and, in fact, the AAP does not "certify" anyone who passes the course, but only gives proof of attendance and a provider card. Pediatricians who attend high risk deliveries should ask themselves when was the last time they intubated or placed an umbilical catheter in a newborn, whether they are competent in these procedures, and how they can best maintain these skills when practice is so rare.

Communication

When problems are anticipated, communication between the obstetric and pediatric providers is essential to assure that the right personnel attend the delivery. In a Sentinel Event Alert, the JCAHO identified organizational culture as a barrier to effective communication and teamwork as a leading root cause of poor birth outcomes. (Issue 30, July 21, 2004). Other root causes included staff competency, orientation and training process, inadequate fetal monitoring, and staffing issues and availability. Moreover, deficiencies in these areas are often claimed by plaintiffs in litigation involving resuscitation of the depressed newborn and subsequent neurologic damage.
Anticipation and preparation for a high risk birth is essential to effective transition for the compromised fetus. Pediatricians need to know when to be present and will be held to

the same response time (i.e. the “30 minute rule”) as their obstetric colleagues. An emergency communication to the potential resuscitation team should include all pertinent information and the acronym “HANDS” may be helpful in this regard: H for hemorrhage, A for amniotic fluid (meconium stained?), N for number of babies expected, D for dates (gestational age) and S for fetal monitoring strip (category I, II or III). The birth of an extremely preterm infant should occur whenever possible in a center capable of putting together a team of trained caregivers to begin intensive care from the moment of birth. If clinical circumstances allow, certain conditions might warrant maternal–fetal transfer to another institution in a regional system where subspecialty services are available. Pediatricians should have frank discussions with their obstetric colleagues about the resources available in their hospitals and which mothers are appropriate for delivery in that hospital or maternal transport, if possible.

Electronic Fetal Monitoring (EFM)

Since the 1960s, obstetricians have been using electronic fetal monitoring to evaluate fetal well-being during labor. Although there is controversy that such technology can prevent birth asphyxia and subsequent cerebral palsy, EFM has gained almost universal acceptance in the 6000 US hospitals that deliver babies. While a non-reassuring fetal strip has a very low positive predictive value of a baby who will need resuscitation, a normal strip in a term fetus is highly predictive of a baby who will *not* require significant interventions at birth. In 2008 the National Institute of Child Health and Human Development defined a three tier system for the categorization of fetal heart rate (FHR) patterns. Category I FHR patterns are normal and strongly predictive of normal fetal acid-

base status. Category II FHR patterns are indeterminate and require continued surveillance and reevaluation. Category III FHR tracings are abnormal, strongly predictive of fetal acidosis and may include absent baseline variability, recurrent late or variable decelerations, bradycardia or a sinusoidal pattern. Obstetricians will soon be using this nomenclature to communicate among themselves and with pediatricians in describing the condition of the fetus and the need for attendance at delivery.

Training

Recently the NRP has moved towards simulation training as the mainstay of resuscitation education. Theoretical advantages for this form of education include better retention of cognitive knowledge, more realistic performance of technical skills, and the development of better individual and teamwork behaviors. This training should become part of every hospital's education program and should include cooperation with the obstetric teams. Mock simulation drills for shoulder dystocia, terminal bradycardia and prolapsed cord should include a stopwatch and evaluation of communication between the specialties as well as within each discipline. Technical and behavioral skills can be practiced in this environment when using prewritten scenarios and appropriate debriefing methods (often with video recording of the mock event). Although high fidelity manekins (Sim NewB®, Laerdal) are available, quite realistic and help the team "suspend their disbelief" that this is only a drill, they are expensive and not absolutely necessary to a successful training program.

Conclusions

Perinatal safety for both mother and baby requires changes in organization and educational cultures in order to facilitate appropriate training and communication for and between obstetrics and pediatrics. Pediatricians should understand the obstetric terminology, prepare themselves to be competent and available for neonatal resuscitation, and participate in mock drills and simulations which help develop teamwork skills and behaviors which are crucial for an effective response to an emergency situation.