Happy Holidays from the Office of Perinatal Quality Improvement

New and “Improved”: The Office of Perinatal Quality Improvement

Holiday Greetings!
We are especially joyful this year because our office is able to continue offering services which have been provided to Oklahoma obstetric hospitals for almost 26 years. Many thanks to the Oklahoma State Department of Health for providing Title V federal funds and to the University of Oklahoma Health Sciences Center, Departments of Obstetrics & Gynecology and Pediatrics, for also providing funding. We have been operating under a new name, “The Office of Perinatal Quality Improvement”. The OPQI will continue to provide outreach education to Oklahoma perinatal care providers and will be expanding our services to include quality improvement activities. Our initial areas of focus are in collaboration with the Oklahoma State Department of Health's Preparing for a Lifetime initiative, which has an overall aim of reducing our state’s rate of infant mortality. These first activities will include elimination of elective deliveries prior to 39 weeks, reduction of abusive head trauma, promotion of breastfeeding, promotion of infant safe sleep, and smoking cessation. Each area of activity will take a different form, and our office will be involved in varying ways. You may have received (see “Improved”, continued on page 6)

New Year, New Staff
Sheldon and Cardwell Retire
Dr. Roger Sheldon, MD, MPH, entered into retirement in July of 2010. Among his multiple involvements, Dr. Sheldon served as consulting neonatologist for the Office of Perinatal Quality Improvement for more than 25 years, helping to create the office and bring the Perinatal Continuing Education Program to hospitals throughout the state of Oklahoma. Through his hundreds of outreach visits and exceptional teaching of providers, Dr. Sheldon (see “Staff”, continued on page 6)
Preventing Maternal Death

Everyday women die of complications during pregnancy, while giving birth, or after delivery; they are mothers, wives, daughters, and friends. Maternal Mortality, or pregnancy-related death, is defined by the World Health Organization (WHO) as “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by her pregnancy or its management, but not from accidental or incidental causes.” ACOG and CDC extend the definition to include one year following termination of a pregnancy.

The Department of Health and Human Services Healthy People 2000 and 2010 objective of reducing maternal mortality to 3.3 deaths per 100,000 live births has not been achieved to date. International Maternal Mortality Rates (MMR) range from 1/47,600 births in Ireland to 1/7 births in Niger – a noteworthy difference. While international MMR is decreasing, the U.S. MMR has increased in recent years. From 1980 through 2002 the MMR in the US fluctuated between 7.1 and 9.9 per 100,000. In 2008 the maternal death rate had risen to 17, ranking the U.S. 40th in the nation, increasing the risks for hypertension, diabetes, and other medical complications that can affect pregnancy outcomes. The MMR for women 35 years and older is 38/100,000; three times the rate for women 20-24 years old. Also recognized are the roles that race and chronic conditions. Other factors that contribute to maternal mortality are obesity and advanced maternal age. Oklahomans rank as the fifth most obese population in the nation, increasing the risks for hypertension, diabetes, and other medical complications that can affect pregnancy outcomes. The MMR for women 35 years and older is 38/100,000; three times the rate for women 20-24 years old. Also recognized are the roles that race and access to prenatal care play in maternal deaths. African-American women are four times more likely to die of pregnancy related complications than white women. In Oklahoma, one in four women is uninsured and 47 percent live in areas with poor access to health care centers and providers. Lack of prenatal care substantially increases a woman’s chance of experiencing unrecognized and untreated complications that can lead to her death.

According to a 2008 study by Hospital Corporation of America (HCA), the most common preventable errors that can lead to maternal death are:

- Failure to adequately control blood pressure in hypertensive women
- Failure to adequately diagnose and treat pulmonary edema in women with pre-eclampsia
- Failure to pay attention to vital signs following Cesarean section
- Hemorrhage following Cesarean section

Recently, several national and international organizations have recommended practices to improve maternal and infant outcomes. Earlier this year, Amnesty International published a report on maternal health care, Deadly Delivery: The Maternal Health Care Crisis in the USA. This report identified failures and inadequacies in current care and made numerous recommendations for improving maternal health care. In January 2010, The Joint Commission issued Sentinel Event Alert #44, Preventing Maternal Death. The alert identifies National Patient Safety Goal 16, “recognize and respond to changes in a patient’s condition”, as the most applicable to the prevention of maternal deaths. In the report, Elliott Main, M.D, states, “too often we under-respond to abnormal vital signs and operate in a state of denial and delay. It is important to identify triggers and establish protocols so that certain findings trigger a response.” The Sentinel Event Alert suggests additional actions listed on the box below.

(see “Mortality”, continued on page 5)

Joint Commission Recommendations for Preventing Maternal Death as listed in Sentinel Event Alert #44

- Educate all health care providers regarding preconception care and counseling for women with medical conditions that increase risks during pregnancy
- Develop protocols for responding to signs of clinical decompensation and practice them with drills to prepare health care providers
- Educate emergency department personnel on physiologic alterations in pregnancy that can affect appropriate diagnosis and treatment before and after birth
- Refer high risk patients to an appropriate specialist
- Make pneumatic compression devices available for Cesarean section patients at risk for pulmonary embolism
- Consider low molecular weight heparin for postpartum patients at risk for thromboembolism
“Mortality” from page 2 -

Strategies to reduce pregnancy related deaths must first focus on surveillance of individual cases. Oklahoma is one of only 21 states in the US to have a maternal mortality review process. The Maternal Mortality Review committee operates under the auspices of the Oklahoma State Department of Health. The objective of this case review process is to identify obstacles or failures within the health care system and make recommendations for action plans that could help reduce the number of women whose lives are lost.

Because maternal deaths are a rare occurrence and may be considered the “tip of the iceberg”, some experts advocate reviewing near misses. For every woman that dies of pregnancy related complications, there are many more who survive a crisis. The stories of survivors could reveal aspects of care that reflect both positively and negatively on outcomes, and as a collective, contribute to strategies to improve maternal care. Hospitals and providers should develop a method of reviewing “near misses” and gathering information as lessons learned.

The overarching goal of all providers that care for obstetrical patients is a safe birth for both mother and newborn. By rigorously and systematically examining the pathways that lead to severe complications and death, and by taking corrective action when a complication arises, this goal could be more attainable in the future.

Oklahoma Infant Alliance Releases Late-Preterm Infant Toolkit for Providers, Parents

Free Download available

The Oklahoma Infant Alliance, coordinated by the Oklahoma Institute for Child Advocacy and supported by a grant from MedImmune, Inc., recently released a clinical practice guideline, Caring for the Late Preterm Infant. The guideline gives recommendations for areas of common concern for infants born between 34\(\frac{6}{7}\) and 36\(\frac{6}{7}\) weeks gestation, including: respiratory distress, feeding, thermoregulation, hypoglycemia, jaundice, and infection. There are also recommendations on facilitation parent-infant attachment and developmental support. The guideline is intended to be a reference for hospital policy and is one of several pieces of a toolkit. The other pieces of the toolkit include a crib card to identify a particular infant as “late preterm” and a parent booklet starring “Casey the Caterpillar.” The parent booklet provides information on the special care that late preterm infants need, as well as space for documentation of hospital events and developmental milestones. Toolkit items are available at http://www.oklahomainfantalliance.org

CDC Releases Revised Guidelines for GBS Prevention

The Center for Disease Control (CDC) has released revised guidelines for “Prevention of Perinatal Group B Streptococcal Disease (GBS).” GBS remains the leading cause of early-onset neonatal sepsis in the United States. The revised guidelines replace those released by the CDC in 2002. Universal screening at 35-37 weeks’ gestation for maternal GBS colonization and the use of intrapartum antibiotic prophylaxis has resulted in substantial reduction of early-onset GBS disease among newborns and therefore continues to be recommended. The key changes in the 2010 guidelines include:

- A change in recommended dose of penicillin-G for chemoprophylaxis (5 million units IV initially, followed by 2.5-3.0 million units IV every 4 hours)
- Expanded recommendations on laboratory methods for the identification of GBS
- Clarification of the colony-count threshold (>\(10^5\) cfu/ml) required for reporting the GBS detected in the urine of pregnant women
- Updated prophylaxis regimens for pregnant women with penicillin allergy, and
- A revised algorithm for management of newborns with respect to risk for early-onset GBS disease.

The entire report can be downloaded at http://www.cdc.gov/mmwr/pdf/rr/rr5910.pdf

AAP: Pediatricians Should Screen for Postpartum Depression at Well-Child Visits

Because maternal postpartum depression affects the whole family, including the young infant, and because the Pediatric PCP is often the first provider new mothers come into contact with following the birth of their baby, the American Academy of Pediatrics (AAP) has released a clinical report recommending that pediatricians screen for postpartum depression at well-child visits. The Edinburgh Postnatal Depression Scale could be appropriately integrated at the 1-, 2-, 4-, and 6-month visits. Concurrent with the implementation of screening, the practice needs to identify support and intervention resources, both within the practice and in the community.

The report was released in the November 2010 issue of Pediatrics.

Newly Released!

- AWHONN Guidelines for Professional Registered Nurse Staffing for Perinatal Units
- AWHONN Assessment and Care of the Late Preterm Infant Evidence-Based Clinical Practice Guideline
Electronic Fetal Monitoring

In lieu of our typical “EFM Strip Teaser,” this month’s edition of OUTREACH features discussion points regarding electronic fetal monitoring.

An internal fetal scalp electrode must be used to obtain a reliable reading of FHR variability.

FHR variability is visually determined by either an external (ultrasound) FHR monitor using autocorrelation or an internal monitor using a fetal scalp electrode. Second-generation FHR monitors have been providing reliable representations of FHR variability for over 20 years through the technology of autocorrelation. The tracing must be of adequate quality for visual interpretation regardless of the method used. A risk/benefit analysis aids in decisions to utilize the least invasive method appropriate for the clinical situation.

It isn’t a late deceleration if moderate variability is present.

The type of deceleration identifies the source of fetal compromise, whereas the level of variability predicts current fetal oxygenation status. The source of compromise in the setting of a late deceleration is utero-placental insufficiency. Moderate variability indicates a normal fetal acid-base status and absent variability may indicate an abnormal fetal acid-base status at the time they are observed.

During labor, intermittent fetal hypoxemia occurs as a result of uterine artery compression due to uterine contraction pressure/strength. It is believed that when the resultant decreased perfusion of the intervillous space causes the fetal pO2 to fall below a certain level tolerated by a particular fetus (approximately 30 mmHg), a late deceleration will occur. This protective reflex occurs when fetal chemoreceptors sense low pO2 and trigger peripheral vasoconstriction resulting in BP rise and shunting blood to fetal brain, heart and adrenals. This rise in BP is recognized by the baroreceptors and generates a vagal (parasympathetic) response to reduce FHR and cardiac output, thus returning the BP to normal. In addition, when the fetal acid-base status is abnormal, it is believed that the decrease in the FHR may be caused by direct myocardial depression of the fetus. So, a late deceleration is a response to intermittent hypoxemia that is not tolerated by this fetus at the time it is observed.

Decreases in FHR baseline variability may be due to nonhypoxic or hypoxic fetal central nervous system depression. Usual causes of nonhypoxic fetal CNS depression include fetal sleep or centrally acting medications such as opioids, magnesium sulfate or tranquilizers. Fetal CNS depression caused by sleep or medications usually results in minimal, but not absent, FHR variability. Nonhypoxic fetal CNS depression may also be due to a preexisting fetal neurologic insult or the presence of a major neurologic or cardiac congenital abnormality. Hypoxic fetal CNS depression may be due to fetal acidemia. This fetal acidemia and subsequent blunting of the autonomic response, can lead to a loss of fetal acceleratory response and a loss of variability. Absent variability, especially if accompanied by variable or late decelerations or FHR bradycardia, indicates a significant risk for fetal acidemia at the time the tracing is observed.

A FHR tracing can exist with late decelerations in the presence of moderate variability. This type of tracing indicates a compensatory fetal response to the stress of contractions (late deceleration) but the fetus has not progressed to an abnormal fetal acid-base status. This pattern may often be corrected by utilizing intrauterine resuscitation techniques. These include maternal supplemental oxygen, lateral maternal positioning, maternal volume expansion, treatment of maternal hypotension, if present, and discontinuation of labor stimulation.

It is important to interpret FHR tracings with the awareness of the evolution of the FHR pattern. If a pattern of late decelerations in the presence of moderate variability is not corrected and allowed to continue, the continued stress of intermittent hypoxemia may evolve to an abnormal fetal acid-base status. This evolution will usually progress through minimal FHR variability before absent FHR variability. Interventions in response to late decelerations should therefore occur as soon as they are observed.

One should not use the term “late deceleration” in the medical record because their presence implies the need for a cesarean delivery.

In September 2008, the National Institute of Child Health and Human Development (NICHD) issued an update on electronic fetal monitoring definitions, interpretation and research guidelines. This report was simultaneously reported in Obstetrics & Gynecology and The Journal of Obstetric, Gynecologic, and Neonatal Nursing. The report includes a discussion of the terminology and nomenclature for the description of fetal heart tracings and uterine contractions for use in clinical practice and research. (Macones, Hankins, Spong, Hauth, & Moore, 2008) In 2009, both ACOG and AWHONN incorporated the 2008 NICHD definitions into practice resources.
providers who use continuous fetal heart monitoring should use this common terminology in their description and interpretation of FHR tracings. The Joint Commission included this recommendation in their Sentinel Event Alert, #30.

The presence of late decelerations, as described above, indicate a fetal response to the stress of uterine contractions. Interventions may or may not alleviate this stress, depending on the clinical circumstances. Decisions regarding mode of delivery are dependent on the clinical situation.

**Scalp stimulation during a deceleration can increase the FHR and restore the FHR to baseline.**

Stimulation of the fetal scalp is an adjunct to FHR assessment. Fetal heart rate accelerations have been shown to be a reliable indicator of fetal well-being whether they are spontaneous or stimulated. It is appropriately utilized during Category II or III tracings when the FHR variability is minimal or absent, and spontaneous accelerations are not present. Scalp stimulation is applied during periods of normal FHR baseline - not during a deceleration.

Eliciting FHR accelerations through gentle digital pressure to the fetal scalp for 15 seconds is an indirect method of evaluating fetal oxygenation and acid-base status. Accelerations in the baseline following stimulation are indicative of a nonacidotic fetus with a pH > 7.2. Lack of acceleration does not always predict acidaemia.

It is inappropriate to use fetal scalp stimulation during a deceleration or FHR bradycardia. The mechanism behind scalp stimulation probably relates to changes in fetal behavioral state (stages of wakefulness and activity). It is doubtful that a change in fetal behavioral state could bring about a return to normal baseline if the mechanism(s) causing the deceleration (cord compression, poor placental perfusion, decreased oxygen, maternal hypotension, increased uterine activity) has not been corrected.

**Pushing with recurrent variable decelerations during second stage is alright since they are “only variables” and the baby will be born soon.**

The active pushing phase of the second stage can be a time of multiple demands on the clinicians and the patient; it is easy to lose awareness of the evolution of a FHR tracing during the second stage of labor when the focus is on “getting the baby delivered”. Maintaining a normal FHR tracing should still remain a primary goal during this stage of labor.

Although the primary cause of variable decelerations is a baroreceptor response to fetal BP changes during cord compression, chemoreceptors (response to decreased pO2) are believed to play a role when cord compression becomes prolonged and fetal oxygen levels fall below a critical threshold. Interpretation and management are based on the overall clinical circumstances including FHR baseline and variability, frequency, duration and severity of decelerations, the FHR response to interventions, and the progression of labor and fetal descent.

If the tracing shows signs of fetal intolerance to pushing efforts, it is important to stop pushing and initiate intrapartum resuscitation measures. Remember that fetal oxygen reserves will ultimately be depleted if the decelerations persist. Since fetal tolerance to variable decelerations varies for each particular situation, it may be prudent to allow second stage to progress with passive descent during the passive phase of second stage. If recurrent variable decelerations persist during the active pushing phase, the mother can push with every second or third contraction to aid in recovery of fetal oxygenation levels between pushing efforts.

References:
formal communications and heard informal information about these issues. As we move forward, the staff of OPQI will be the point of contact for any questions or concerns you have regarding these hospital-based efforts so that you will only have to remember one place to go for information. We are very excited to be embarking on these efforts! Before we move into 2011, we must thank all of you who provided emails and letters of support for our office—THANK YOU! We hope that all of you will enthusiastically participate in improving perinatal care for Oklahoma women and newborns. We need each of you to be a part of realizing our vision that childbearing women and newborns in Oklahoma will have access to and receive safe, quality healthcare and achieve optimal health.

has undoubtedly impacted the lives of thousands of Oklahoma newborns. Dr. Sheldon has moved to Minnesota where he will be close to family. OPQI has welcomed Dr. Anne Wlodaver, MD as consulting neonatologist. Dr. Wlodaver is an attending neonatologist at the Children’s Hospital at OU Medical Center, specializing in neonatal resuscitation and transition. She looks forward to visiting Oklahoma’s delivering hospitals and improving the care given to infants in the first minutes of life.

Judie Cardwell, our office manager for the past 15 years, has also retired. Judie provided invaluable service to our office in managing day-to-day operations and behind the scene organization. Many of you will recall her welcoming voice and cheerful disposition when contacting the office. We wish her well in enjoying retirement. Courtney Hunter is our new administrative assistant.

We thank Dr. Sheldon and Judie for their many years of dedication to our office and we welcome Dr. Wlodaver and Courtney to the OPQI team!