PERINATAL: EFM EXECUTIVE SUMMARY for OB MEDICAL DIRECTORS & HOSPITAL MANAGEMENT:

Why is standardized EFM communication important?
Assessment of mother and fetus during pregnancy is important to successful outcomes. In the US, electronic fetal monitoring (EFM) became part of fetal assessment in the 1950’s. Practitioners gain important knowledge regarding fetal tolerance to pregnancy, labor, and birth through EFM. Historically, information obtained by this method is often interpreted differently among perinatal providers due to a lack of common terminology. In 2005, American College of Obstetricians and Gynecologists (ACOG) and the Association of Women’s Health, Obstetric, and Neonatal Nurses (AWHONN) endorsed the 1997 National Institute of Child Health and Human Development (NICHD) terms and guidelines as the nationally accepted EFM reference. In 2008, NICHD, ACOG, and AWHONN collaborated and updated the terms and guidelines for national acceptance and utilization by all hospitals and perinatal providers skilled in EFM. Unfortunately, not all hospitals or perinatal providers have adopted these guidelines and the implications are shown in medical malpractice risk. Below are statistical data to support the impact of inconsistent and poor EFM interpretation and communication. All perinatal safety advocates (IHI, NQF, ACOG, AWHONN, TJC, SMFM) all support multidisciplinary EFM standardization. EFM standardization effects every facility in the US who provides care to the pregnant population.

- In general, the perinatal population exaggerates risk to a hospital or health system. IHI data reveals (2012):
  - Stays with pregnancy-related complications tended to be longer (2.9 days for non-delivery stays and 2.7 days for delivery stays) than delivery stays without complications (1.9 days).
  - Maternal stays with complications were about 50% more costly ($4,100 for non-delivery stays and $3,900 for delivery stays) than delivery stays without complications ($2,600).
  - Maternal stays with pregnancy and delivery-related complications accounted for $17.4 billion, or nearly 5% of total hospital costs in the United States.

- Today, over 85% of approximately 4 million births in the United States are assessed with electronic fetal monitoring (ACOG, 2009, #106).

- The high inter- and intra-observer variability in EFM interpretation among perinatal providers (ie., RNs, CNMs, Residents, Family Practice MDs, Obstetricians, and MFM Specialists) leads to poor reliability. (ACOG 2013, #106; Blix et al, 2003).

- In 2004, The Joint Commission (TJC) Sentinel Event Alert #30 identified top root-causes of perinatal infant death and injury:
  - Communication Error: 72%
    - EFM miscommunication was a key factor
✓ Organization culture as a barrier to effective communication and teamwork:
  o Hierarchy and intimidation
  o Failure to function as a team
  o Failure to follow the chain-of-communication.

❖ On average, 31% of adverse events are the result of communication failure (White et al, 2005). Miscommunication may include errors or omissions in both verbal and written communication and may include:
  o Disruptions in the flow of critical information from caregiver to caregiver OR
  o Disruptions in the flow of critical information between patient and caregiver.
  o Miscommunication included: basic errors among providers, misunderstanding due to lack of common terminology, delays in communication, or total absence of communication

❖ TJC Update (2014)-During 2004-2013, The Joint Commission (TJC) identified & ranked the most frequently occurring root causes of Maternal & Perinatal sentinel events as:
  o Human Factors
  o Communication
  o Assessment
  o Leadership (*ranked in top 3 for all other root cause errors by TJC)

  o TJC: #1 Human Factor (Root-cause definition)-
    ▪ Staffing levels, staffing skill mix, staff orientation, in-service education, competency assessment, staff supervision, resident supervision, medical staff credentialing/privileging, medical staff peer review, other (e.g., rushing, fatigue, distraction, complacency, bias).

  o EFM Human Factor Errors may include:
    ▪ Inadequate orientation to EFM upon hire
    ▪ Inadequate or lack of annual EFM skill maintenance
    ▪ Insufficient RN-Patient ratios during EFM per AWHONN guidelines
    ▪ Inadequate EFM education &/or supervision during residency
    ▪ Inadequate or lack of EFM credentialing for new and existing MD staff
    ▪ Absence of EFM credentialing linked to MD privileging
    ▪ Inadequate or lack of EFM medical staff peer review

  o TJC: #2 Communication (Root-cause definition)-
    ▪ Oral, written, electronic, among staff, with/among physicians, with administration, with patient or family.

    ▪ EFM Communication Errors may include:
      ✓ Failure of RN to communicate deteriorating fetal condition to primary practitioner (Maternal-Fetal Medicine MD, Obstetrician, CNM, Resident, Family Practice MD) and/or charge nurse
      ✓ Failure of OB MD Hospitalist to communicate deteriorating fetal condition to the primary practitioner
✓ Failure of OB MD Hospitalist to communicate deteriorating fetal condition to the primary practitioner
✓ Miscommunication between MD to RN, RN to RN, RN to MD, or MD to MD regarding EFM tracing
✓ Failure of RN to activate hospital chain of command protocol when indicated
✓ Failure of RN to request an MD bedside assessment of the patient and fetus when clinical conditions warrant
✓ Failure to of RN/MD document deteriorating fetal status, interventions performed, and resolution or non-resolution

TJC: #3 Assessment (Root-cause definition)
- Adequacy, timing, or scope of; assessment; pediatric, psychiatric, alcohol/drug, and/or abuse/neglect assessments; patient observation; clinical laboratory testing; care decisions.

- **EFM Assessment Errors may include:**
  ✓ Failure to assess EFM strip data per national NICHD & ACOG guidelines
  ✓ Delay or failure to assess EFM based on ACOG 3 Tier FHR Interpretation Category System
  ✓ Failure of RN to assess fetus based on criteria set forth by AWHONN Staffing guidelines
  ✓ Delay or failure to recognize & intervene for fetal deterioration/evolution prior to Category III FHR pattern
  ✓ Delay or failure to recognize & intervene for uterine tachysystole or other prolonged abnormal uterine patterns
  ✓ Delay or failure to perform interventions based on ACOG evidence-based, peer-reviewed practice algorithms

TJC: Leadership (Root-cause definition)
- Organizational planning, organizational culture, community relations, service availability, priority setting, resource allocation, complaint resolution, leadership collaboration, standardization (e.g., clinical practice guidelines), directing department/services, integration of services, inadequate policies and procedures, non-compliance with policies and procedures, performance improvement, medical staff organization, nursing leadership

- **EFM Leadership Errors may include:**
  ✓ Promoting an organizational culture with hierarch and intimidation as a barrier to effective communication and teamwork
  ✓ Failure to allocate appropriate nursing resources to meet current AWHONN staffing guidelines
  ✓ Failure to allocate appropriate resources (OR staff/Anesthesia/Obstetrician) in cases of maternal and/or fetal sentinel events
✓ Failure to promote a culture of transparency, safety & team work
✓ Lack of open system communication in error identification, patient safety and process improvement
✓ Inadequate or absent coordination of perinatal medical information into central computerized system (from EFM to Central Hospital database) and archiving capabilities based on medical-legal implications for a period applicable to state requirements
✓ Inadequate or absence of benchmarking performance improvement efforts based on criteria set forth by nationally recognized authorities (ACOG, AWHONN, NQF, AHRQ, IHI, AORN, etc)
✓ Failure to incorporate an obstetrician in medical staff decisions regarding care to maternal, fetal, and or neonatal patients
✓ Failure to develop and sustain an Obstetric Quality Improvement Program based on ACOG’s Quality Improvement in Women’s Health Care manual & tools
✓ Failure to develop and implement evidence-based EFM policies, procedures, and guidelines based on national best-practice recommendations by national governing agencies

❖ Institute for Healthcare Improvement (IHI) identifies four key components of Idealized Design of Perinatal Care (Cherouny et al, 2005) include:
  o The development of **reliable clinical processes** to manage labor & delivery
  o The use of principles that improve safety (i.e., preventing, detecting, and mitigating errors)
  o The establishment of prepared and activated care teams that communicate effectively with each other and with mothers and families
  o A focus on mother and family as the locus of control during labor and delivery

  o IHI has identified EFM error:
    • The wide variation in the way obstetricians and nurses interpret the fetal monitoring strip may be due to the absence of a common language for interpretation, lack of multidisciplinary training in teamwork and communication, and variability in processes of care.

❖ NQF: OB ‘NEVER’ Events redefined:
  o The National Quality Forum’s (NQF) Health Care "Never Events" (2011 Revision). NQF Most Never Events are very rare. In 2006, Kwaan and others estimated that a typical hospital might experience a case of wrong-site surgery once every 5 to 10 years. However, when Never Events occur, outcomes are devastating. In Sentinel Event #33, 71% of events reported to the Joint Commission over the past 12 years were fatal and may indicate a fundamental safety problem within an organization.
  o The NQF’s Never Events are considered sentinel events by the Joint Commission.
  o **NQF: Obstetric-related Never-events:**
- Maternal death or serious injury associated with labor or delivery in a low-risk pregnancy while being cared for in a health care setting
- Death or serious injury of a neonate associated with labor or delivery in a low-risk pregnancy
  - EFM related errors are a key factor leading to death or serious injury of a neonate during intrapartum

- Additional Sources: OB Never-events (Simpson, 2006) related to EFM:
  - Death or serious disability of a fetus or infant with a reassuring fetal heart rate pattern on the mother’s admission for labor absent an acute unpredictable event
  - Prolonged periods of untreated uterine hyperstimulation during oxytocin or misoprostol administration
  - Prolonged periods of unrecognized or untreated Cat II or Cat III FHR during labor
  - Infant death or disability after prolonged periods of repetitive, coached second-stage labor pushing efforts during a nonreassuring fetal heart rate pattern

**What is the Medical-Legal & Financial Impact of EFM Errors?**
- In 2012, 92% of the total malpractice indemnity awarded was for incidents that occurred within hospitals, compared with 84% over the prior 10 years (Stanford University Network/TRA, 2013).
- Over 50% of a typical hospital’s budget for risk management is spent in the Labor and Delivery area (Jury Verdict Research, 2001)
- The median malpractice award for a childbirth-related claim involving obstetricians and hospitals was $2.5 million for the period from 1997 to 2003 (Jury Verdict Research, 2005).
- Almost half (46%) of liability claims against obstetricians involve EFM (ACOG)
- The top 3 most frequent allegations in perinatal malpractice claims are (CRICO/RMF, 2007; Greenwald & Mondor, 2003):
  - Delay or failure to identify/diagnosis a deteriorating fetal condition
  - Failure to intervene for an abnormal FHR pattern
  - Failure to communicate maternal-fetal status to additional perinatal team members
- EFM Indemnity costs exceed over $57.7 million dollars in indemnity costs (CRICO/RMF, 2007).
- A 2013 Survey by Stanford University Network, The Risk Authority of California revealed the following regarding obstetrical medical malpractice cases:
  - Obstetrics is the leading cause of malpractice in CA
  - Three birth injury awards (15% of all cases) accounted for over 44% of the total indemnity
- Average birth injury award in 2012: almost $35 million (10 times the average of the prior 10 years)
- One case where the hospital settled during trial, saddling an obstetrician with a $74.2 million birth injury verdict (Stanford University Network/TRA, 2013).

**IHI Recommendations: Best Obstetrical/EFM Defense** (Cherouny et al, 2005):
- Prevention or minimization of harm whenever possible, through adherence to evidence-based practice guidelines that are provided by a care team that works together smoothly and effectively (a high-functioning team), complemented by complete and accurate documentation of that care.

**How to standardize with national NICHD Terms & Guidelines?**
Due to the critical importance of EFM standardization, integration of national guidelines and terminology into all aspects of patient care involving EFM is paramount for patient safety. Numerous national governing bodies and patient safety advocates (ie., IHI, AHRQ, ACOG, AWHONN, TJC) support the use of standardized EFM terminology to decrease risk and to improve maternal-fetal safety. Outlined below are the specific recommendations from various resources. Administration must support development of nationally acceptable standards for EFM terms and guidelines as set forth by the National Institute of Child Health and Human Development (NICHD) in 1997 and reaffirmed and updated in 2008 with endorsement from ACOG and AWHONN. Please review support of these recommendations:

**IHI Recommendations:** Idealized Design of Perinatal Care (Cherouny et al, 2005):
- **Base the care system on reliable science (failure-free operation over time)** that is representative of the best science, the soundest evidence, upon which to base practice. Examples include:
  - ACOG Practice Bulletins (peer-reviewed guidelines)
  - Randomized controlled Trials
  - Expert Opinions from reputable/peer-reviewed governing bodies (IHI, AHRQ, AWHONN, etc).

- Deliver care through a reliable, transparent, and reproducible method. Examples include
  - Standardized Order Sets
  - Protocols
  - Evidence-based guidelines
  - Checklists
  - Perinatal Care bundles

- **IHI EFM Solutions:**
  - Institute standardized common language for descriptions of EFM strips
  - Develop standardized management that incorporates both obstetricians and nurses, without inconsistencies or ambiguities
  - Define clinical solutions to adverse EFM findings based on a “team-approach” infrastructure
Design clinical benchmarks; examples include:

- Birth trauma (i.e., neonatal injury as defined in the AHRQ Patient Safety Indicators) is reduced to a maximum of 3.3 adverse events per 1,000 live births. According to AHRQ the national estimate of birth trauma per 1,000 live births was 7.358 in 2001.
- Patients (mothers) state that 95 percent of the time their wishes are known to the entire care team and respected.
- Perinatal units report a 50 percent improvement in their culture survey scores. One example of a culture survey tool is AHRQ’s Hospital Survey on Patient Safety Culture (HSOPSC) Toolkit.
- All claims or allegations may be defended because they meet each institution’s internal standards for defense (e.g., consistent documentation, no lapses in documentation, no lapses in communication).

- TJC EFM Recommendations:
  - Educate nurses, residents, nurse midwives, and physicians to use standardized terminology to communicate abnormal fetal heart rate tracings
  - Develop clear guidelines for fetal monitoring of potential high-risk patients, including nursing protocols for the interpretation of fetal heart rate tracings

- EFM Standardized Communication Solution:
  - This solution offers a framework for perinatal team members to consistently identify uterine contraction and fetal heart rate data and to effectively communicate regarding fetal assessment during the antepartum and intrapartum timeframes. Include 1-3:
    - Utilization of NICHD standardized nomenclature and specific guidelines (1997 & 2008)
    - Adoption of ACOG 3 Tier FHR Category System (2009)
    - Integration of ACOG EFM practice management algorithms (2010)
    - Provide multidisciplinary EFM education and training for orientation and annual proficiency analysis of employees and medical staff

- EFM Resources-National NICHD Terms & Guidelines are outlined in several national peer-reviewed and evidence-based documents listed below. Development and maintenance of hospital EFM policies, procedures, protocols, and guidelines should be based upon criteria outlined within these resources. These resources offer a framework and do not outline a single course of action regarding EFM practice management.
  - All are endorsed by: ACOG/AWHONN/SMFM/ACNM/AAFP
    - NICHD 1997
- **NICHD/ACOG 2008**

- **ACOG 2009/2013**
  - *Document is provided free to ACOG members at:*
    - [http://www.acog.org](http://www.acog.org)
  - *Non-members may send a personal request to ACOG for a free copy of the document to:*
    - **ACOG Resource Center Email address:** resources@acog.com
  - *Non-members may purchase a Practice Guidelines Online Subscription at:*
    - [http://sales.acog.org/Practice-Guidelines-Online-Subscription-P618C86.aspx](http://sales.acog.org/Practice-Guidelines-Online-Subscription-P618C86.aspx)

- **ACOG 2010/2013**
  - *Document is provided free to ACOG members at:*
    - [http://www.acog.org](http://www.acog.org)
  - *Non-members may send a personal request to ACOG for a free copy of the document to:*
    - **ACOG Resource Center Email address:** resources@acog.com
  - *Non-members may purchase an ACOG Practice Guidelines Online Subscription at:*
    - [http://sales.acog.org/Practice-Guidelines-Online-Subscription-P618C86.aspx](http://sales.acog.org/Practice-Guidelines-Online-Subscription-P618C86.aspx)

- **National Certification Center (NCC) EFM Certification**
  - Many hospitals & health systems require staff certification in EFM by NCC, the only certification governing body in the US. Although AWHONN provides a national train-trainer EFM program, AWHONN is not a certifying body for any clinical specialty, including EFM. The NCC program is not endorsed by ACOG, AWHONN, or ACNM but does provide a peer-reviewed EFM certification exam.
    - **NCC EFM Certification Exam Information**
Medical Interactive/Perinatal University (MIPU) offers the only online NCC EFM Certification Review course nationwide. Our continuing education program offers 15 hours of instruction and CE credit for nurses preparing for the NCC Exam.

- MIPU NCC EFM Certification Review Course

Leadership Support for EFM

As the organization's leadership team, it is imperative to share the urgency to standardize EFM terms and guidelines within obstetric departments. Leadership should be the driving force in this effort. Support is required from all levels of management to include c-suite or top-level administration, middle management and individuals who provide direct patient contact at the bedside.

- Integrate EFM standardization & perinatal patient safety into the organization's mission, vision, values and quality improvement programs. Use the attached tool to assess the level of leadership support found in your organization. The attached article shows the significance of leadership support for quality improvement that may be applied to your perinatal patient safety and EFM Standardization efforts.

EFM, Senior Leadership Support for QI – Assessment
Senior Leadership Support for QI - Article

- Consider assessing your staff’s general knowledge about perinatal adverse events as a baseline to begin the creation of a new or revised perinatal safety program. IHI provides a generalized Perinatal Trigger Tool with 22 key indicators for evaluation of quality improvement (see below). MIPU has an EFM specific Trigger Tool that may be utilized for retrospective chart review of EFM interpretation, communication, and management (see below).
  - IHI Perinatal Trigger Tool: Specific quality and safety indicators have been incorporated into a perinatal trigger tool—a tool designed to identify adverse events in obstetric and neonatal care—by the Institute for healthcare Improvement (IHI). User must login to IHI as a free member then may access the Perinatal Trigger Tool in the IHI search engine:
  - EFM Trigger Tool: Use this tool during OB chart audits to assess for EFM adverse events

- Track, trend, and benchmark your facilities EFM-related obstetric reportable events as part of your perinatal safety and quality improvement efforts. Harvard Risk Management Foundation: CRICO/RMF EFM-related Reportable Events (Gardner, 2007):
  - FETAL Origin
    - Apgar scores of 3 or less at five minutes
    - Cord pH less than 7.0
    - Respiratory distress syndrome after elective induction or scheduled repeat cesarean section
    - Stillbirth or neonatal death before 24 weeks gestation or weight of more than 500 grams
- MATERNAL Origin
  - Death
  - Eclampsia
  - Hysterectomy
  - Symptomatic uterine rupture

- AHRQ/PSOPPC Perinatal Adverse Event Reporting: AHRQ coordinates the development of Common Formats for reporting patient safety events to Patient Safety Organizations (PSOs). This activity is authorized by the Patient Safety and Quality Improvement Act of 2005 (Patient Safety Act) and the Patient Safety and Quality Improvement Final Rule (Patient Safety Rule). In collaboration with the Patient Safety Work Group (PSWG), AHRQ has developed Common Formats for two settings of care: acute care hospitals and skilled nursing facilities. The PSOPPC is now accepting patient safety event data from PSOs. Patient safety event data may be submitted by a PSO to the PSOPPC for de-identification and transmission of the data to the Network of Patient Safety Databases (NPSD). The PSOPPC is only accepting patient safety event data in the format outlined below.

  - PSOPPC Disclaimer: The Common Formats Aggregate Reports contained on this page are mock-up reports and do not contain actual data. These reports are intended to provide example information on patient safety events.
    - AHRQ/PSOPPC: Perinatal Event Description
    - AHRQ/PSOPPC: Perinatal Aggregate Report
    - AHRQ/PSO Patient Safety Event Report: Perinatal TOOL may be used for general perinatal safety reporting and submitting.
      - Question #17: Fetal Adverse Event- answer A or B may pertain to EFM Error
      - Question #19: Neonatal Adverse Event- answer A-D and F-G may pertain to EFM Error

- Support and participate in transformative strategies for providing safe obstetric care that facilitates and includes EFM standardization (Clark et al, 2008):
  - The use of uniform processes and procedures
  - Unsafe processes can be halted by empowering all members of the OB team to intervene
  - Cesarean delivery is a process alternative, not an outcome or quality endpoint/measure
  - Adherence to unambiguous EFM practice guidelines can reduce adverse outcomes, reduce the risk of litigation, and reduce the need to defend varying interpretations of ambiguous guidelines
  - Effective peer review is essential to ensure quality medical practice.

- Consider-OB Hospitalist/Laborist: A New Model for Intrapartum Obstetric Care
  - Many perinatal clinical guidelines require a physician to be “immediately available” during procedures (ie. VBAC). Obstetricians are now filling the role of OB Hospitalist or Laborist for 24/7 coverage of the labor and delivery department to improve patient safety. The primary function of this role is to be immediately available for unforeseen OB emergencies. The OB Hospitalist may begin consult on EFM related issues and offer emergent
care (ie., cesarean section) while the primary care provider is in route. Facilities should consider & compare OB medical-legal risk versus the cost of 24/7 OB coverage. A variety of OB Hospitalist Programs are available nationwide:

- Volunteer private-practice physicians who provide in-hospital coverage
- Contracting with staff company or physician group
- Hybrid Model: Hospitalist coverage of both Labor & Delivery and for the Emergency Department
- Contracting with Laborists to assume delivery services from nurses based on patient census. Primary duty is LD coverage, with additional options: ER coverage, private patients, consults, assistant in cesarean deliveries, assist & execute perinatology care plans.

- A large hospital health system found that 40% of adverse outcomes were related to intrapartum fetal hypoxia (as evidenced on EFM) and that claims may have been avoided if an OB Hospitalist was available (Clark et al, 2008).

- **EFM & Electronic Medical Records:** Hospital acquired EMRs must communicate and integrate EFM data into the main database. Facilities need to purchase EFM monitors and documentation systems compatible with the hospital’s main EMR system. Refer to manufacture guidelines to confirm compatibility. Community information included:

  - "The health system desperately needs working information technology to help support quality care," said AMA President-elect Steven J. Stack. "The current generation of EMRs and the way they are deployed is not supporting the quality of care we need it to." (Wall Street Journal, Sept.16, 2014).

  - The booming health-information technology market is undergoing rapid change. The U.S. market for EMR alone is $9 billion this year, according to Kalorama Information, with many clients switching vendors and many vendors consolidating.

  - Cognizant agreed to acquire TriZetto Corp., a privately held health IT provider, for $2.7 billion. Combined, the two have more than $3.2 billion in health-care revenue and will serve nearly 245,000 providers and 350 payers with 180 million covered lives.

  - The depth of doctors’ disgruntlement is evident in many surveys. Some 85% of physicians use EMRs but only 24% said they increased efficiency and 47% say they detract from patient care, according to a survey released today by the nonprofit Physicians Foundation.

- **Examples of HOSPITAL EMRs:**
  - McKesson
  - GE Healthcare: Centricity
  - eClinicalWorks
- Microsoft
  - Examples of EFM EMRs:
    - Philips: IntelliSpace
    - Perigen
    - CCSI: Obix Perinatal Data System
    - Hill-Rom: Watch-Child/Navi-care

- **Budgeting for EFM Monitors:** One of the largest capital expenses in the obstetrics/perinatal budget is purchasing or upgrades of electronic fetal monitors (EFM). Purchases should reflect the majority of the obstetric population you serve. Facilities with a large high-risk constituency which may include numerous multiple gestation pregnancies (twins/triplets) require more Multi-fetal EFMs in labor and delivery. Purchase should be based on:
  - OB population risk status
  - Annual delivery rate
  - Vaginal vs. Cesarean delivery rate
  - #Labor & Delivery rooms vs triage rooms
  - Multiple gestation population

- Examples of EFM Monitors include, but are not limited to:
  - GE: Corometrics
  - Philips: Avalon

**EFM Tools**

Included in this section are various tools and resources to assist with the standardization of EFM within your facility. Please access each item and implement to improve patient safety and decrease risk associated with EFM.

- **Huddles:**
  Huddles are well established in the healthcare literature as micro-system meetings with a specific focus, based on the function of a particular unit and team. Safety huddles have been endorsed by the Leapfrog Group, the Institute for Healthcare Improvement and the Robert Wood Johnson Foundation. Huddles are effective communication tools that elicit a pattern of practice-level thinking that is not necessarily intuitive to each staff member. Benefits include encouragement of staff of a particular department to practice as a team.

Using EFM as an example, the entire perinatal team in labor and delivery may participate in EFM huddles. This may include but is not limited to: unit secretaries, nurses, residents, CNMs, physicians, anesthesia personnel, OR Technicians, and any additional ancillary staff. EFM Huddles may be preventative or restorative. Preventative EFM Huddles identify potential risk adverse events, whereas, restorative EFM Huddles are performed after an adverse EFM event has occurred. The perinatal team meets/huddles at the beginning of each shift to discuss all at-risk fetuses who may be exhibiting nonreassuring EFM data (FHR or UC).
Strategies to prevent evolution of an FHR pattern from a Category II to III are discussed and patients at-risk for emergent or urgent delivery are discussed and documented on the EFM Huddle: Preventative Tool. Following any adverse EFM event, or any other clinical event necessitating an emergent delivery, the perinatal team will huddle to debrief how, why, and areas of improvement regarding the adverse event on the EFM Huddle: Restorative Tool. The unit should be restored to its original resources of staff, equipment, and assets as soon as possible following the event. The unit charge nurse is the huddle team leader.

Please note that documents created during post-event huddles or investigations AND retained (even if not retained in the medical record) may be discoverable based on the evidentiary rules of your state. Please consult your legal consul regarding the creation of policy and procedures surrounding the post event investigation process.

- **MIPU EFM Huddle Tool:** Preventative (Brief) *Use this tool to immediately following a maternal-fetal couplet adverse event*
- **MIPU EFM Huddle Tool:** Restorative (Debrief) *Use this tool to identify maternal-fetal couplets at risk for adverse events*

- **MIPU Fetal Risk Assessment Tool** *Use this tool to identify fetal risk status of acid-base imbalance based on ACOG 3 Tier FHR Category System. May post these near EFM in labor and delivery*

- **MIPU EFM Policy & Procedure** Download and use at your facility

- **EFM Guidelines**
  - See reference on page 8 for ACOG 2009/2013
  - See reference on page 8 for ACOG 2010/2013
  - AWHONN Fetal Heart Monitoring Position Statement (2008/under revision)
  - AHRQ: EFM Guideline NGC-7371

- **MI/MIPU EFM Courses:** Medical Interactive (MI) and Medical Interactive Perinatal University (MIPU) provide quality educational resources to all perinatal practitioners skilled in EFM. Physicians may visit MI for CME and nurses may visit MIPU for CNE. Our resources include various learning methods: video and monograph for individual preference.
  - MI Multidisciplinary (CME/CNE): Advanced EFM Lesson 1
  - MI Multidisciplinary (CME/CNE): Advanced EFM Lesson 2
  - MI Multidisciplinary (CME/CNE): Advanced EFM Lesson 3
  - MIPU EFM Method: Advanced EFM (CNE-4hrs)
  - MIPU NCC EFM Certification Review Course (CNE-15hrs)

- **EFM Emergency/Rapid Response Drill Training Tools**
  - MIPU EFM Skills Analysis Checklist
- MIPU EFM Training Algorithms

- MIPU EFM Pocket Guide

References