GUIDELINE

TH Fetal Heart Rate and Uterine Surveillance

ST. JOSEPH MERCY OAKLAND
SAINT JOSEPH MERCY HEALTH SYSTEM

Document Owner: Michele Rausch

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PURPOSE

To provide guidelines for assessing and recording intermittent auscultation and continuous electronic fetal heart rate (FHR) and uterine activity patterns for antepartum and intrapartum patients. (Excludes procedural documentation and interpretation, i.e. NST)

NOTE: This information is designed to aid practitioners in making decisions about appropriate obstetric care. These guidelines should not be construed as dictating an exclusive course of treatment or procedure. Variations in practice may be warranted based on the needs of the individual patient, resources, and limitations unique to the institution or type of practice.

DEFINITIONS

OB Provider:
The attending physician of record (Obstetrician/Gynecologist or Family Medicine), or designee (Laborist/Hospitalist) or Certified Nurse Midwife (CNM)/Certified Midwife (CM).

Tachysystole:
Excessive uterine activity, which can be either spontaneous or induced. More than 5 contractions in 10 minutes (averaged over 30 minutes).

ROLE AND COMPETENCIES:

A. Education and Credentialing of Clinicians Using EFM

1. The National Certification Corporation Certification in Electronic Fetal Monitoring and the Perinatal Quality Foundation (PQF) electronic fetal monitoring (EFM) credentialing tool are the acceptable options for EFM certification. The certifications in EFM options chosen by the HM are determined by individual HM practices.
2. OB Providers, Registered Nurses, and resident physicians in training are expected to achieve certification in EFM within one year of working in a position/having clinical privileges that requires interpretation of fetal monitor tracings, and maintain certification in EFM as an employment/credentialing requirement.
3. OB Providers, Registered Nurses, and resident physicians in training should attend a fetal monitoring course, or other activity to attain CME/CE at least every three years. It is expected that the CME/CE Credits of the fetal monitoring course or activity be applied to continuing education requirements to maintain certification in EFM. (Determined by individual HM practices).

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4. MA/RN (who is not EFM Certified) may place a pregnant woman on the fetal monitor for an NST conducted only in the office/clinic as long as an EFM Certified OB Provider (Physician, CNM/CM, RN) is on-site and immediately available to interpret the FM tracing. If there is no EFM Certified provider on-site at the time that a NST is scheduled, then it cannot be performed. NOTE: This would not apply to the antenatal testing unit within the hospital, triage, labor and delivery, antepartum or other inpatient units.

B. An OB Provider may apply both external and internal electronic fetal monitoring (EFM) devices.

C. Resident physicians in training may apply both external and internal fetal monitoring devices without direct supervision after appropriate education, demonstration and competence validation by a supervising physician or a more senior resident physician (as determined by individual HM practices).

D. Registered Nurses:

1. May apply both external and internal (FSE, IUPC) electronic fetal monitoring (EFM) devices after appropriate education, demonstration and competence validation by a nurse preceptor (as appropriate as determined by individual states Board of Nursing and individual Ministry HM practices).
   i. Conditions necessary for insertion of internal fetal monitoring devices include ruptured membranes, adequate cervical dilatation, and an OB Provider's order (as determined by individual HM practices).
   ii. Placement of a FSE and IUPC is determined by individual states' Board of Nursing and individual HM practices.

2. May insert internal fetal monitoring devices in emergent situations, and request an order by the OB Provider later (as appropriate as determined by individual states' Board of Nursing and individual HM practices).

PRACTICE AND MANAGEMENT:

A. During the prenatal period, provide low risk women with information on the benefits, limitations, indications, and risks associated with intermittent auscultation (IA) and continuous electronic fetal monitoring (EFM), to encourage participation in the decision-making process regarding the monitoring method used throughout labor (ACOG, 2019; ACNM, 2010a, AWHONN, 2017, AAP & ACOG, 2017).

B. All patients presenting to Labor and Delivery units at viability should undergo an initial period of electronic fetal monitoring for a minimum of 20 minutes or until fetal well-being is assured after the MFTI (maternal fetal triage index) is assigned. Monitoring for longer periods may be continued

depending on the clinical circumstances. (Note: The decision to monitor the preterm fetus at or near viability requires a discussion between the obstetrician, consulting neonatologist, pediatrician and the patient concerning the likelihood of survival or severe morbidity of the preterm child and issues related to the mode of delivery.)

C. Select the method of FHR assessment based upon the initial fetal monitoring assessment, presence of risk factors at the time of the patient's admission and shared decision-making with patient.

1. No Risk Factors and evidence of fetal well-being on admission fetal monitoring assessment: Intermittent auscultation, intermittent fetal monitoring (external US transducer, or hand held Doppler), or telemetry is the preferred method in low risk women to limit intervention and improve maternal freedom of movement.

   NOTE: Certain high-risk conditions requiring continuous EFM may not be listed in Table C, along with low risk conditions that would fulfill requirements for intermittent auscultation.

2. Maternal or fetal risk factors for adverse outcomes or acidemia are present on admission or developed during labor, or a high-risk condition identified by the OB provider, continuous monitoring will be required to assure appropriate assessment of fetal well-being. **See Table C: Examples of High Risk Conditions/Indications Requiring Continuous Fetal Monitoring.**

3. RN will validate fetal assessment method order with OB Provider.

D. Document fetal heart characteristics and patterns using the NICHD terminology. **See Table B**.

E. Manage the FHR patterns based upon the interpretation of the tracing and document interventions: (See Table A: Interpretation)

1. Category I: Routine management
2. Category II: See Algorithm B Management of Category II FHR Tracings
3. Category III:
   a. Prepare for delivery.
   b. Initiate appropriate intrauterine resuscitation.
   c. Consider prompt delivery if no improvement.

F. Initiate intrauterine resuscitation as appropriate for Category II and III patterns and document interventions. **See Table E: Intrauterine Resuscitation**.

G. Assess uterine contraction status by subjective (ask woman about onset, timing and intensity of contractions) and objective assessment by direct palpation, IUPC and through EFM assessments

to include: baseline uterine resting tone, frequency, intensity and duration of uterine contractions. NOTE: Average uterine resting tone is considered to be 5-25 mmHg. A higher resting tone may be noted for Pitocin induction, multiple fetuses, and amnionitis. An elevated baseline resting tone > 25 mmHg may warrant further evaluation to determine etiology.

H. Manage uterine tachysystole based upon spontaneous or induced/augmented labor and the fetal heart rate pattern and document interventions **(See Algorithm A.)**

I. Notify OB Provider and document if there are other features of excessive uterine activity including: contractions lasting 2 minutes or more, contractions of normal duration occurring within 1 minute of each other, or insufficient return of uterine resting tone between contractions via palpation or intraamniotic pressure above 25 mmHg between contractions via IUPC.

J. Include in RN and OB Provider shift handoff communications:
   a. Admission FHR and uterine pattern
   b. Current FHR and uterine pattern
   c. Significant events and interventions in labor

PROCEDURES

A. Procedure for Performing Intermittent Auscultation:

1. Explain the procedure to the patient and her support person(s).
2. Perform Leopold's maneuvers to identify the fetal presentation and position.
3. Assist the laboring woman into a position that maximizes audibility and preserves comfort.
4. Assess uterine contractions by palpation.
5. Determine the maternal pulse rate.
6. Place the Doppler, external ultrasound transducer device over the fetal thorax or back.
7. Determine the baseline fetal heart rate by listening between contractions and when the fetus is not moving for at least 30 seconds. Verify maternal pulse rate.
8. Subsequently auscultate and count the fetal heart rate during and after a uterine contraction for 15 - 30 seconds to detect periodic changes**.(See Table D. for frequency)**
9. Note audible increases or accelerations, or decreases or audible decelerations from the baseline.
10. Interpretation of Intermittent Auscultation (AWHONN, 2018)
    Category I FHR characteristics by auscultation include all of the following:
    - Normal FHR baseline between 110 and 160 bpm
    - Regular rhythm
    - Presence or absence of FHR increases or accelerations from the baseline
    - Absence of FHR decreases or decelerations from the baseline

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Category II FHR characteristics by auscultation include any of the following:

- Irregular rhythm
- Presence of FHR decreases or decelerations from the baseline
- Tachycardia (baseline >160 bpm, >10 minutes in duration)
- Bradycardia (baseline <110 bpm, >10 minutes in duration)

11. Document the FHR characteristics in the medical record.
12. If there are FHR characteristics by auscultation that are concerning, initiate continuous electronic fetal heart rate monitoring and notify OB Provider.

B. Procedure for External EFM Ultrasound Application:

1. Explain the procedure to the patient and her support person(s).
2. Set the EFM paper recorder; check the printed date, time, and patient identification for accuracy. Perform validation test per manufacturer's instructions.
3. Perform Leopold's maneuvers or use ultrasound transducer to obtain optimal location for placement. (As a general guideline, place the transducer on the abdomen below the level of the umbilicus in a full-term pregnancy of cephalic presentation or above the level of the umbilicus in a full-term pregnancy of breech presentation.)
4. Assist the patient to nonsupine position of comfort.
5. Validate the fetal heart rate by auscultation before placing the transducer. Assess and confirm FHR baseline rate, baseline variability, and FHR pattern characteristics (presence or absence of accelerations and/or decelerations), and interventions as appropriate using the NICHD definitions in Table B.
6. Differentiate fetal heart tracing with maternal heart rate upon admission and as clinically indicated. This can be done by checking the mother's pulse, or briefly with the pulse oximeter. NOTE: Continuous pulse oximetry is not routinely recommended in labor (unless medically indicated for the mother).
7. Readjust the ultrasound transducer as needed to obtain a continuous FHR.
8. If unable to record a continuous FHR via external monitoring, troubleshoot per manufacturer, then consider fetal scalp electrode.
9. Discontinue oxytocin (if infusing) until a continuous FHR can be recorded.

C. Procedure for External Tocodynamometer (Toco) Application:

1. Explain the procedure to the patient and her support person(s).
2. Assist the patient to a semi lateral or upright position of comfort.

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3. As a general guideline, place the Toco on the maternal abdomen over the upper uterine segment where there is the least amount of maternal tissue between the pressure-sensing button and the uterus (where uterine contractions are best palpated).
4. Adjust the UA reference calibration device between contractions to print at the 20 mm Hg line on the chart paper.
5. Test the Toco by applying slight pressure and observe the tracing for a relative inflection of momentary increase from the "baseline."
6. Monitor the frequency and duration of the contractions.
7. Readjust the abdominal strap and Toco periodically to optimally record uterine activity.
8. Palpate the fundus regularly to assess uterine activity and resting tone between contractions.
9. If unable to record a continuous tracing of uterine activity via external monitoring, contact OB Provider for further orders to determine alternate method for monitoring.
10. Discontinue oxytocin (if infusing) until a continuous tracing of uterine activity can be recorded.

D. Procedure for Inserting Fetal Spiral Electrode (FSE):

1. Explain procedure to the patient and her support person(s).
2. Attach spiral electrode to the presenting part using sterile technique and as described in the FSE manufacturer instructions.
3. Assess and confirm FHR baseline rate, baseline variability, and FHR pattern characteristics (presence or absence of accelerations and/or decelerations), and interventions as appropriate using the NICHD definitions in Table B.
4. If unable to record a continuous FHR via internal monitoring, troubleshoot per manufacturer's instructions to achieve an adequate tracing, and contact the OB Provider.
5. Use external ultrasound transducer as an alternative.
6. Discontinue oxytocin (if infusing) until a continuous FHR can be recorded.

E. Procedure for Inserting Intrauterine Pressure Catheter (IUPC):

1. Explain procedure to the patient and her support person(s).
2. Insert the IUPC using sterile technique and as described in the IUPC manufacturer instructions.
3. Monitor the frequency, duration and intensity of the contractions as well as the uterine resting tone.
4. If unable to record an adequate or continuous tracing of uterine activity via internal monitoring:
   a. Adjust catheter per manufacturer's recommendations to achieve an adequate tracing.
   b. Contact OB Provider for further orders if unable to achieve an adequate tracing.

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c . Use external Toco as an alternative.

5. Discontinue oxytocin (if infusing) until a continuous tracing of uterine activity can be recorded.

F. Procedure for Non-invasive fetal ECG (fECG) and Uterine Electromyography (mEMG) Monitoring Intrapartum Maternal/Fetal Monitor that non-invasively measures and displays fetal heart rate (FHR), uterine activity (UA) and maternal heart rate (MHR). The external unit displays the FHR tracing from abdominal surface electrodes that pick up the fetal ECG (fECG) signal and the UA tracing from the uterine electromyography (EMG) signal and the MHR tracing from the maternal ECG signal (mECG).

Indications: Women who are at >36 completed weeks, in labor, with singleton pregnancies, using surface electrodes on the maternal abdomen.

1. Place the external unit to the abdomen per the manufacturer's instructions.
2. Wash any cream/oil/gel from abdomen and ensure the area is dry.
3. Replace the external unit after 48 hours or if skin irritation develops. Avoid placement on skin with lesions.
4. Follow the manufacturer's recommendations for application of device, troubleshooting, and maintenance of equipment.

MEDICAL RECORD DOCUMENTATION:

1. Documentation regarding assessment of FHR pattern and uterine activity:
   a. Use the full description of the FHR tracing per NICHD definitions (see Table B) to include: FHR baseline rate, baseline variability, and FHR pattern characteristics (presence or absence of accelerations and/or type of decelerations), and interventions as appropriate.
   b. The Three-Tiered Fetal Heart Rate Interpretation System (Table A) may be only used in the medical record in conjunction with full description of the FHR tracing per NICHD definitions (see Table B).
   c. Use the full description of uterine activity characteristics to include description of the frequency, duration, intensity and resting tone as appropriate to monitoring method.
   d. For maternal-fetal assessments in labor and birth, **see Table D.**
   e. Evaluate the FHR components within the most recent 10-minute segment: baseline rate, variability, and periodic/episodic changes. If a FHR pattern occurs earlier in the assessment timeframe that warrants a note, note the correct time, and the interventions that occurred.
   f. Document the actions taken to maintain a continuous FHR tracing and/or uterine activity tracing.
   g. Documentation regarding Indeterminate (Category II) / Abnormal (Category III) FHR Patterns includes:
      - duration of the indeterminate/abnormal FHR pattern,

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- clinical context (e.g. tachysystole, maternal hypotension, maternal temperature, bleeding, medications, etc.).
- specific intrauterine resuscitation measures implemented and the maternal-fetal response. **See Table D, and Algorithms A, and B**
- notification of the OB Provider and the content of the conversation.

EFM ALARMS/ALERTS:

1. Set visual alarms/alerts for FHR patterns in the EFM surveillance system.

Fetal Heart Rate (110-160)
Alert after 300 seconds above: 160
Alert after 60 seconds below: 110
Default range: 110 – 160

Maternal Heart Rate (60-120)
Alert after 60 seconds above: 120
Alert after 60 seconds below: 60
Default range: 60 – 120

Maternal Oxygen Saturation (95)
Alert immediately below: 95
Default range: 95

Maternal Blood Pressure (90-160 / (50-90)
Systolic:
Alert immediately above: 160
Alert immediately below: 90
Default range: 90 – 160
Diastolic:
Alert immediately above: 90
Alert immediately below: 50
Default range: 50 – 90

2. In the event where variation from the alarms/alerts values is clinically indicated and acceptable, the RN notifies the OB Provider or his/her designee (Laborist/Hospitalist, resident physician) if the Alarms/Alerts are changed and documents in the medical record.

3. Validate that alarms have been reset to system patterns if they have been adjusted.

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FETAL ASSESSMENT PRIOR TO CESAREAN BIRTH:

A. Scheduled Cesarean Birth:
   1. Determine during the admission process fetal well-being by a 30-minute baseline fetal heart rate tracing by continuous EFM.
   2. Discontinue EFM if the woman is not in active labor and the FHR is Category I, after this initial assessment.
   3. Obtain the FHR in the OR after initiation/induction of anesthesia and prior to beginning the cesarean birth, and documented in the medical record.

B. Unscheduled Cesarean Birth:
   1. Continue internal or external continuous fetal surveillance until abdominal sterile preparation has begun.
   2. During initiation of regional anesthesia in the OR, every attempt should be made to continuously assess fetal status until abdominal sterile preparation has begun.
      - In situations where continuous fetal surveillance may not be possible (e.g. during spinal anesthesia placement) determine the FHR in the OR after initiation/induction of anesthesia prior to beginning the cesarean birth.
   3. In some emergency Cesarean birth circumstances (e.g. cord prolapse, abruption, etc.) an expeditious delivery outweighs the benefit of monitoring attempts.

C. Maintain a Permanent Record of EFM Tracings: (The following apply to intrapartum and antepartum EFM Tracings.)
   1. Validate that the entire EFM tracing is archived in the electronic medical record system, if available. If the tracing has not been archived, save the tracing paper version. Any documentation on a paper tracing must also appear in the EMR or electronically archived tracing.
   2. Print all nonarchived EFM tracings and retain as part of the medical record
   3. Prepare and store in the following manner:
      a. Number paper tracing segments in sequence.
      b. Include patient's name, MRN and the date on each paper tracing segment.
      c. Use a plastic bag with a zip closure to store paper tracing within the opaque envelope to prevent degradation of the ink or others measures to reduce exposure to heat, air and light.

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Table A

Three-Tiered Fetal Heart Rate Interpretation System: NICHD (2008)	
Category	**Pattern**
I	Category I FHR tracings include all of the following: Baseline rate: 110-160 beats per minute Baseline FHR variability: moderate Late or variable decelerations: absent Early decelerations: present or absent Accelerations: present or absent
II	Category II FHR tracings includes all FHR tracings not categorized as Category I or Category III. Category II tracings may represent an appreciable fraction of those encountered in clinical care. Examples of Category II FHR tracings include any of the following: Baseline rate • Bradycardia not accompanied by absent baseline variability • Tachycardia Baseline FHR variability • Minimal baseline variability • Absent baseline variability with no recurrent decelerations • Marked baseline variability Accelerations • Absence of induced accelerations after fetal stimulation Periodic or episodic decelerations • Recurrent variable decelerations accompanied by minimal or moderate baseline variability • Prolonged decelerations > 2 minutes but less than 10 minutes • Recurrent late decelerations with moderate baseline variability • Variable decelerations with other characteristics such as slow return to baseline, overshoots, or "shoulders"
III	Category III FHR tracings include either: Absent baseline FHR variability and any of the following: • Recurrent late decelerations • Recurrent variable decelerations • Bradycardia Sinusoidal pattern

Adapted from: Macones, G. A., Hankins, G. D. V., Spong, C. Y., Hauth, J., & Moore, T. (2008). The 2008 National Institute of Child Health and Human Development workshop report on electronic fetal monitoring. Obstetrics and Gynecology, 112(3), 661-666.

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Table B

Fetal Heart Rate Characteristics and Patterns: NICHD (2008)	
Term	**Definition**
Baseline Rate	Approximate mean FHR rounded to increments of 5 bpm during a 10-minute window, excluding accelerations and decelerations and periods of marked FHR variability (> 25 bpm). There must be at least 2 minutes of identifiable baseline segments (not necessarily contiguous) in any 10-minute window, or the baseline for that period is indeterminate. In such cases, it may be necessary to refer to the previous 10-minute window for determination of the baseline.
Bradycardia	Baseline rate of < 110 bpm.
Tachycardia	Baseline rate of > 160 bpm.
Baseline Variability:	Determined in a 10-minute window, excluding accelerations and decelerations. Fluctuations in the baseline FHR that are irregular in amplitude and frequency and are visually quantitated as the amplitude of the peak-to-trough in bpm.
-Absent Variability	Amplitude range undetectable.
-Minimal Variability	Amplitude range > undetectable and ≤ 5 bpm.
-Moderate Variability	Amplitude range 6-25 bpm.
-Marked Variability	Amplitude range > 25 bpm.
Acceleration	Visually apparent abrupt increase in FHR. Abrupt increase is defined as an increase from onset of acceleration to peak is < 30 seconds. Peak must be ≥ 15 bpm, and must last ≥ 15 seconds from the onset to return. Acceleration lasting ≥10 minutes is defined as a baseline change. Before 32 weeks of gestation, accelerations are defined as having a peak ≥10 bpm and duration of ≥ 10 seconds.
Prolonged Acceleration	Acceleration is ≥ 2 minutes but < 10 minutes in duration.
Early Deceleration	Visually apparent, usually symmetrical, gradual decrease and return of FHR associated with a uterine contraction. The gradual FHR decrease is defined as one from the onset to FHR nadir of ≥ 30 seconds. The decrease in FHR is calculated from onset to nadir of deceleration. The nadir occurs at the same time as the peak of the contraction. In most cases, the onset, nadir, and recovery of the deceleration are coincident with the beginning, peak, and ending of the contraction, respectively.
Late Deceleration	Visually apparent, usually symmetrical, gradual decrease and return of FHR associated with a uterine contraction. The gradual FHR decrease is defined as from the onset to FHR nadir of ≥ 30 seconds. The decrease in FHR is calculated from the onset to nadir of deceleration. The deceleration is delayed in timing, with nadir of deceleration occurring after the peak of the contraction. In most cases, the onset, nadir, and recovery of the deceleration occur after the beginning, peak, and ending of the contraction, respectively.
Variable Deceleration	Visually apparent abrupt decrease in FHR. An abrupt FHR decrease is defined as from the onset of deceleration to beginning of FHR nadir of < 30 seconds. The decrease in FHR is calculated from the onset to the nadir of deceleration. The decrease in FHR is ≥ 15 bpm, lasting ≥ 15 seconds, and < 2 minutes in duration. When variable decelerations are associated with uterine contractions, their onset, depth, and duration commonly vary with successive uterine contractions.
Prolonged Deceleration	Visually apparent decrease in FHR from baseline that is ≥ 15 bpm, lasting ≥ 2 minutes, but < 10 minutes. Deceleration that lasts ≥ 10 minutes is baseline change.
Recurrent Deceleration	Occurring with ≥ 50% of uterine contractions in any 20-minute window.
Intermittent Deceleration	Occurring with < 50% of uterine contractions in any 20 minute window
Sinusoidal Pattern	Visually apparent, smooth, sine wave-like undulating pattern in FHR baseline with cycle frequency of 3 -5/minute that persists for ≥ 20 minutes

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Table C: Examples of High Risk Conditions/Indications for Requiring Continuous Electronic Fetal Monitoring During Labor

Maternal Conditions	Pregnancy	Labor	Fetal Conditions
• Active substance use • Opioid use disorder treatment • Chronic HTN • SLE/antiphospholipid syndrome • Thyroid disease, uncontrolled • Diabetes: pre-gestational; uncontrolled gestational; GDM on medications • Previous Cesarean birth • History of IUFD • Active pulmonary compromise	• Cholestasis • Hypertension/Pre-eclampsia • Multiple pregnancy • Oligohydramnios/ Polyhydramnios • Prematurity (less than 36 weeks) • Preterm premature ROM <36 weeks • >41 weeks gestation • Current antepartum hemorrhage	• Chorioamnionitis/Triple I • Epidural/intrathecal anesthesia • Meconium • Pitocin administration • Cervidil administration • Vaginal bleeding, other than bloody show • Misoprostol administration	• IUGR • Known congenital anomaly • Red cell alloimmunization • Fetal arrhythmia • Abnormal/Indeterminate fetal assessment testing

Not exclusions to intermittent auscultation: narcotic administration, ROM at term with clear fluid < 24 hours. Marijuana use alone is not an exclusion, but warrants a discussion on an individual patient basis.

NOTE: Certain high-risk conditions requiring continuous EFM may not be listed in the table along with low risk conditions that would fulfill requirements for intermittent Auscultation, but should be determined by the OB provider in collaboration with the perinatal team.

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Table D. Inpatient Nursing Maternal Fetal Assessments and Documentation Quick Reference Guide

	Latent Labor		**Late Latent** (4-5cm) **Active Labor** (6cm) **or Passive 2nd Stage**		**Active Pushing**		**Oxytocin**	**Cervical Ripening**		**Neuraxial Analgesia/ Anesthesia**	**Mag Sulfate**	
	Low Risk	**High Risk***	**Low Risk**	**High Risk***	**Low Risk**	**High Risk***	**Induction/ Augmentation**	**Mech**	**Pharm**		**Bolus & Change Dose**	**Maintenance**
EFM: Continuous FHR & UA	q1 hr	q30 min		q15 min	q15 min or summary note q30 min	q5 min or summary note q30 min	q15 min and prior to rate change	q4 hrs	q30 min	**Initiation / Rebolus:** q5 min x 15 min, at 30 min and at 1 hr. **Maintenance:** Follow Low / High Risk labor N/A: Intermittent Auscultation	q15min x4, q30min x2	q1 hr
IA: Intermittent Ausculation	q1 hr	N/A	q30 min	N/A	q15 min	N/A	N/A	q4 hrs	N/A		N/A	N/A
Maternal VS: P-R-BP	q4 hrs	q1 hr						q4 hrs			q15min x4, q30min x2	q1 hr
Maternal Temperature	q4 hrs; q1hr with ROM	q2 hr; q1hr with ROM						q4 hrs; q1hr with ROM		q2 hr; q1hr with ROM		

*High Risk = women with high-risk pregnancy or at risk for adverse outcomes due to a maternal or fetal risk factor

Note: Summary documentation of fetal status every 30 minutes can be performed indicating continuous nursing bedside presence and evaluation during active pushing stage.

AWHONN References
1. Lyndon, A., & Ali, Linda Usher. (2015). Fetal Heart Monitoring, Principles and Practices, 5th ed.
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Table E. Intrauterine Resuscitation: Possible interventions based on Clinical Judgment

GOAL	TECHNIQUES/ METHODS
Promote Fetal Oxygenation	• Lateral positioning (either left or right) • IV fluid bolus of at least 500 ml of lactated Ringer's solution • Discontinuation of oxytocin/removal of dinoprostone insert (prostaglandin E2) / withholding next dose of misoprostol • Pushing with every other or every third contraction or discontinuation of pushing temporarily during 2nd stage labor • Oxygen administration 10L/minute via non-rebreather face mask (discontinue as soon as possible based on fetal response)
Reduce Tachysystole	• Removal of dinoprostone insert (prostaglandin E2)/ withholding next dose of misoprostol • Lateral positioning (left or right) • IV fluid bolus of at least 500 ml of lactated Ringer's solution <u>Oxytocin-induced Tachysystole with Normal FHR (CATEGORY I)</u>: • If uterine activity has not returned to normal after 10-15 minutes, decrease oxytocin by at least half. If uterine activity has not returned to normal after 10-15 more minutes, discontinue oxytocin until uterine activity is less than 5 contractions in 10 minutes. <u>Tachysystole with Indeterminate (CATEGORY II) or Abnormal FHR (CATEGORY III)</u>: • May decrease or discontinue oxytocin based upon Category • If no response, consider 0.25 mg terbutaline SQ To resume oxytocin after resolution of tachysystole: • If oxytocin has been discontinued for less than 30 minutes, the FHR is normal, and contraction frequency, intensity, and duration are normal, resume oxytocin at no more than half the rate that caused the tachysystole and gradually increase the rate as appropriate based on unit protocol and maternal fetal status. • If oxytocin is discontinued for more than 30 minutes, may resume oxytocin at the initial dose ordered.
Alleviate Umbilical Cord Compression	• Repositioning • Amnioinfusion (during first-stage labor) • Pushing with every other or every third contraction or discontinuation of pushing temporarily during 2nd stage labor •If prolapse cord is noted, elevation of the presenting fetal part as preparations are underway of expeditious birth may be effective
Correct Maternal Hypotension	• Lateral positioning (either left or right) • IV fluid bolus of at least 500 ml of lactated Ringer's solution • If no response, consider vasopressor medication (e.g. ephedrine) IV push

Adapted from "Fetal assessment during labor" by A. Lyndon, N. O'Brien-Abel, &, K.R. Simpson and from "Labor and birth" by K.R. Simpson & N. O'Brien-Abel. In K.R. Simpson & P.A. Creehan (eds.), AWHONN's Perinatal Nursing (4th ed., pp.461-464). Copyright 2014

GUIDELINE

TH Fetal Heart Rate and Uterine Surveillance

ST. JOSEPH MERCY OAKLAND
SAINT JOSEPH MERCY HEALTH SYSTEM

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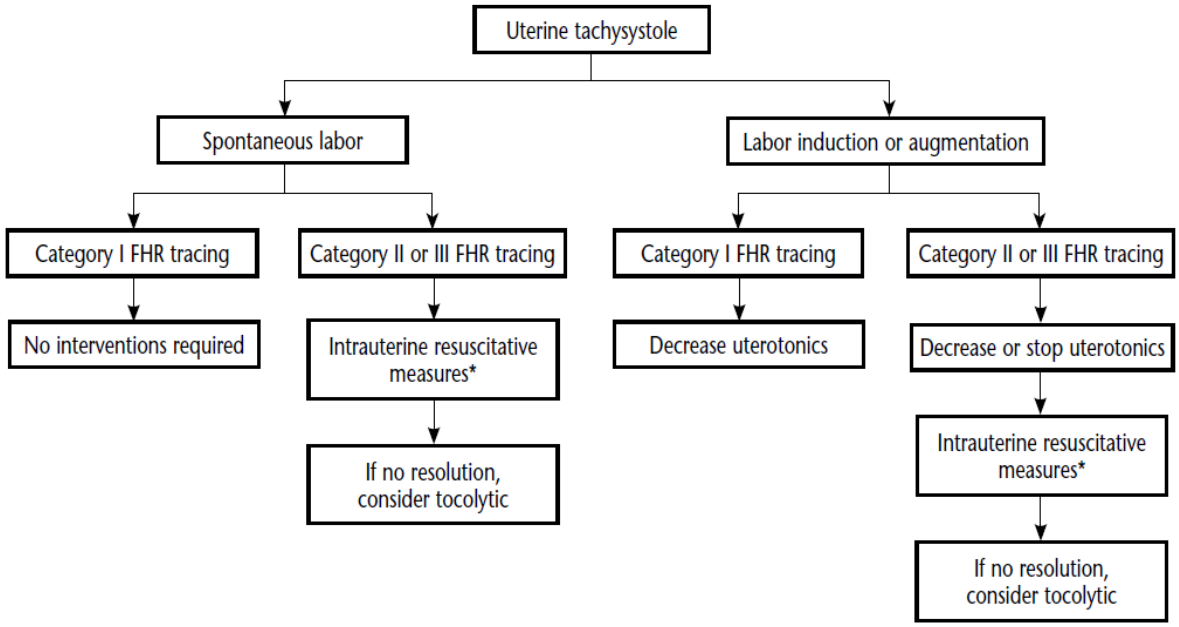
Algorithm A. Management Algorithm for Uterine Tachysystole (ACOG Reaffirmed 2017)

* See Table E. Intrauterine Resuscitation: Possible interventions based on clinical judgment



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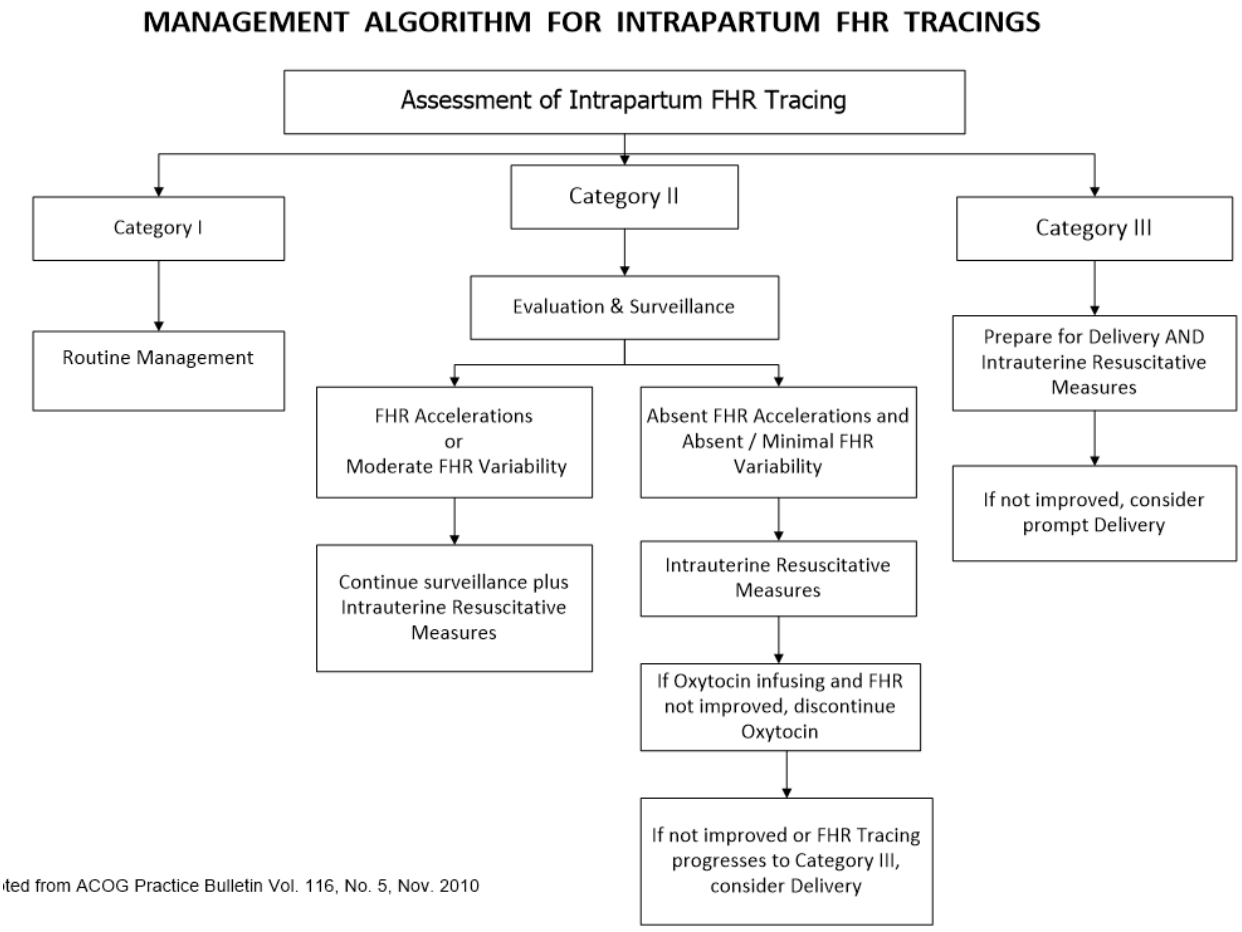
Algorithm B:



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