Beyond the Basics: The Art and Science of Tracing Interpretation

Session 5:

December 2, 2015
Wisconsin Association for Perinatal Care (WAPC)

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• Notice of requirements for successful completion
  • Registrants must attend full session and complete evaluation to receive contact hours

• Conflicts of Interest
  • None to report

• Financial Disclosures
  • None

• Sponsorship or commercial support
  • None

• Non-endorsement of products
  • The speaker does not endorse the use of any particular medications or products as part of this educational session
Before we begin…

• Listen-only mode

• Questions – please ask, please answer!
  • Raise your hand
  • Type into the Question Pane
  • Out of time? Email wapc@perinatalweb.org

• Technical problems: Email Barb Wienholtz at wienholtz@perinatalweb.org or call at 608-285-5858, ext. 201
Before we begin…

The content presented today is a case study. Components of this case were chosen based on their applicability to achieve learning objectives for this presentation. Do not assume the patient featured in the case was cared for by the instructor or at the facility at which the instructor is employed.

The discussion will focus on interpretation of the electronic fetal monitoring (EFM) tracings for the purpose of education. At times, the discussion may lead to the care decisions made based on EFM interpretation.

IF the instructor shares details regarding actual or potential care decisions, please note those decisions do not necessarily reflect the opinions of the instructor, a particular provider, the standard of care for any particular institution or facility, or of WAPC.
Objectives

At the conclusion of the session, participants will be able to:

1. Systematically review risks and benefits of intermittent auscultation.

2. Identify two instances where intermittent auscultation is indicated.

3. Identify and categorize the FHR pattern.

4. Identify the recommended frequency of auscultation for all phases of labor.

5. Discuss interventions for management and documentation of intrapartum intermittent auscultation.
The 2008 National Institute of Child Health and Human Development (NICHD) Report of Fetal Heart Rate Monitoring

- Defined standard fetal heart rate nomenclature
- Identified three categories for fetal heart rate interpretation
- Proposed future research
Report endorsed by:


- AWHONN-endorsed and incorporated in fetal monitoring curriculum

- American College of Nurse Midwives

- American Academy of Family Practice
"Management of Intrapartum Fetal Heart Rate Tracings"

• Reviewed:
  • Nomenclature
  • Fetal Heart Rate Interpretation (categories)

• Provided framework for evaluation and management of intrapartum patterns based on categories

• Assessment algorithm for fetal heart rate patterns

• Intrapartum resuscitative measures

• Management of uterine tachysystole
The following questions are used to evaluate every tracing, followed by specific questions:

1. What is the contraction pattern? (interval, duration, resting tone if appropriate)
2. What is the baseline fetal heart rate?
3. What is the baseline variability?
4. Are there any periodic changes present?
5. Are there any episodic changes present?
6. What are the probable causes of the changes present?
7. When was the last reassuring sign of fetal well-being?
• Interpretation
• Interventions/Communication
• Documentation in chart
• SBAR
  • Situation
  • Background
  • Assessment
  • Recommendation
AWHONN POSITION STATEMENT:
Fetal Heart Monitoring
Published Sept/Oct, 2015
How does your institution use intermittent auscultation (IA)?

a. Used exclusively
b. Used to verify the fetal heart rate and maternal heart rate on admission solely
c. Used to clarify fetal heart rate solely
d. Used on admission and to clarify the fetal heart rate
e. Do not use intermittent auscultation
Use of External Fetal Monitoring

• Retrospective study (2013) found increase in use of electronic fetal monitoring from 73.4% in 1990 to 85.7% in 2004.

• US national survey (Listening to Mother’s III. 2013) found
  • 89% reported receiving EFM
  • 80% reported continuous monitoring
  • 12% reported intermittent monitoring
    • 5% EFM used for baseline assessment only
Case Study

• Admission History
• 24 YO
• G2P1001
• 40 1/7 weeks (dating consistent with 12 US)
• Medical History-Non-contributory
• Surgical History-Non-contributory
• Psychosocial History-Non-contributory
• Past OB History-NSVD at 40/6/7 weeks, augmented labor @ 5 cm due to no cervical change for past five hours
• Current Pregnancy- consistent prenatal care
Case Study

• Admission:
  • Patient states she has been contracting for ~1.5 hours and contractions are now q 10 minutes per patient
• Membranes intact
• 110/68, 88, 20. 98.7
• Fetal Movement +
• FHR
• VE 2/70/-2
Question 2

Based on your patient’s refusal to be monitored you should

A. Honor her request and do not monitor the patient
B. Ask her to sign a refusal of treatment
C. Notify OB provider
Informed Consent and Intermittent Auscultation

- Responsibility of physician or CNM
  - How procedure is performed
  - Risks/Benefits
  - Alternatives
  - Future implications

- Role of nurse to advocate
Benefits of Intermittent Auscultation

• Non-invasive
• Freedom of movement and ambulation increased
• Able to assess FHR if patient is submersed in water
• Less costly than EFM equipment
• 1:1 support at bedside allows for hands-on care and support
• Neonatal outcomes are comparable to those monitored with EFM in randomized controlled trials
• Lower caesarean birth rates have been associated with IA over EFM
Limitations of Intermittent Auscultation

• Documentation is not automatic.
• Use of auscultation does not allow the ability to detect or differentiate between decelerations and visual patterns of the FHR variability or periodic changes.
• May limit the ability to hear the FHR e.g. obesity, increased amniotic fluid volume, during contractions.
• Assessments of the FHR may seem intrusive.
• Significant events may happen during periods when not auscultated.
• Not recommended for high risk pregnancies.
• May need to adjust staffing patterns.
• Education, practice and skills required.
• Fetoscope
• True auscultation requires use of fetoscope, lefscope, or stethoscope
When to Use Intermittent Auscultation

- Admission, discharge, transfer of patient
- Prior to and following rupture of membranes
- Prior to and following ambulation
- Administration and evaluation of medication and anesthesia
- Evaluation of oxytocin (maintenance, increase or decrease)
- Vaginal examinations
- Evaluation of abnormal uterine activity
  - Increased tone, sustained contractions, hyper stimulation
How to Perform Intermittent Auscultation

- Explain procedure to woman and her support
- Assist to semi-fowlers or wedged lateral position
- Palpate the abdomen and perform Leopold’s Maneuver
- Assess uterine contractions for frequency, duration, intensity and resting tone by palpation
- Apply gel is using Doppler
- Position bell of fetoscope or Doppler device on area of maximum intensity (usually over fetal back)
- Palpate maternal pulse
- Count FHR after uterine contraction for at least 30-60 seconds
- In clarifying FHR changes, recounts for multiple, consecutive brief periods
- Interpret FHR findings and document per unit protocol
- Share findings with woman and her support
- Promote maternal comfort and fetal oxygenation
Case Study

• Admission History
• 24 YO
• G2P1001
• 40 1/7 weeks (dating consistent with 12 US)
• Medical History-Non-contributory
• Surgical History-Non-contributory
• Psychosocial History-Non-contributory
• Past OB History-NSVD at 40/6/7 weeks, augmented labor @ 5 cm for >4 hours
Admission:

- Membranes-Intact
- Stated contractions started ~1.5 hours ago; now every 10 minutes per patient
- Fetus active
- VS
  - 110/60
  - 88
  - 98.7
  - 20
- FHR
- VE- 2/70/-2
Question 2

Following review of the patient’s history, what is the recommended frequency of assessment?

a. Do not need to assess
b. Every 30 minutes
c. Every hour
### Recommended Frequency of Auscultation
(Adapted from AWHONN, 2009)

<table>
<thead>
<tr>
<th></th>
<th>Latent Phase</th>
<th>Active First Stage</th>
<th>Active Second Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACNM</td>
<td>q 15-30 minutes</td>
<td>q 5 minutes</td>
<td></td>
</tr>
<tr>
<td>ACOG</td>
<td>q 15-30 minutes</td>
<td>q 5 minutes</td>
<td></td>
</tr>
<tr>
<td>AWHONN</td>
<td>q 15-30 minutes</td>
<td>q 5-15 minutes</td>
<td></td>
</tr>
<tr>
<td>RCOG</td>
<td>q 15 minutes</td>
<td>q 5 minutes</td>
<td></td>
</tr>
<tr>
<td>SOGC</td>
<td>At time of assessment and approximately q 1 hour</td>
<td>Q 15-30 minutes</td>
<td>q 5 minutes</td>
</tr>
</tbody>
</table>

### Recommended Frequency of Auscultation
(Adapted from AWHONN, 2009)

<table>
<thead>
<tr>
<th>Latent Phase (&lt;4cm)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-risk without Oxytocin</td>
<td>At least hourly</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Your patient has now progressed to 4 cm
Following review of the patient’s history, what is the recommended frequency of assessment?

a. Every 5 minutes
b. Every 15 minutes
c. Every 15-30 minutes
d. Every 30 minutes
### Recommended Frequency of Auscultation

(Adapted from AWHONN, 2009)

<table>
<thead>
<tr>
<th>Latent Phase (&lt;4cm)</th>
<th>Latent Phase (4-5 cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-risk without Oxytocin</td>
<td>At least hourly</td>
</tr>
<tr>
<td></td>
<td>Every 15-30 minutes</td>
</tr>
</tbody>
</table>

Question 4

For a low risk patient in the second stage of labor doing active pushing, the FHR should be auscultated every

A. 5-15 minutes
B. 30 minutes
C. 60 minutes
<table>
<thead>
<tr>
<th></th>
<th>Latent Phase (&lt;4cm)</th>
<th>Latent Phase (4-5 cm)</th>
<th>Active Phase (≥ 6 cm)</th>
<th>Second Stage (Passive fetal descent)</th>
<th>Second Stage (active pushing)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low-risk without Oxytocin</strong></td>
<td>At least hourly</td>
<td>Every 15-30 minutes</td>
<td>Every 15-30 minutes</td>
<td>Every 15 minutes</td>
<td>Every 5-15 minutes</td>
</tr>
</tbody>
</table>

*Feinstein, n., Sprague, A. & Trepanier, M.J. (2009). Fetal Heart Rate Auscultation (2nd ed.)/ AWHONN: WaSHINGTON, DC.*
### Recommendations for Assessment of Fetal Status During Labor with EFM

<table>
<thead>
<tr>
<th></th>
<th>Latent Phase (&lt;4 cm)</th>
<th>Latent Phase (4-5 cm)</th>
<th>Active Phase (&gt; 6 cm)</th>
<th>Second Stage (passive fetal descent)</th>
<th>Second Stage (active pushing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low risk without oxytocin</td>
<td>At least hourly</td>
<td>Every 30 minutes</td>
<td>Every 30 minutes</td>
<td>Every 15 minutes</td>
<td>Every 15 minutes</td>
</tr>
<tr>
<td>With oxytocin or risk factors</td>
<td>Every 15 minutes with oxytocin, every 30 minutes without</td>
<td>Every 15 minutes</td>
<td>Every 15 minutes</td>
<td>Every 15 minutes</td>
<td>Every 5 minutes</td>
</tr>
</tbody>
</table>

Question 4

Parameters that can be assessed via intermittent auscultation include:

a. Baseline rate, increases in FHR, decreases in FHR
b. Baseline rate, variability, clarify arrhythmia
c. Baseline rate, late decelerations, variable decelerations
## Comparison of Fetal Heart Rate Characteristics – Auscultation versus Electronic Fetal Monitor

<table>
<thead>
<tr>
<th>FHR Characteristic</th>
<th>Fetoscopy</th>
<th>Doppler without Paper Printout</th>
<th>Electronic FHR Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variability</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Baseline Rate</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Accelerations</td>
<td>Detects Increases</td>
<td>Detects Increases</td>
<td>Yes</td>
</tr>
<tr>
<td>Decelerations</td>
<td>Detect Decreases</td>
<td>Detects Decreases</td>
<td>Yes</td>
</tr>
<tr>
<td>Rhythm</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Double or half counting of FHR</td>
<td>Can Clarify</td>
<td>May Double or half count</td>
<td>May double or half count</td>
</tr>
<tr>
<td>Differentiation of maternal heart rate and FHR</td>
<td>Yes</td>
<td>May detect maternal heart rate</td>
<td>May detect and record maternal heart rate</td>
</tr>
</tbody>
</table>

Interpretation of Auscultated Fetal Heart Rate

Category I (Normal)
ALL of the following:
• Normal FHR baseline between 110-160 bpm
• Regular Rhythm
• Presence or absence of FHR increases from the baseline rate
• Absence of FHR decreases from the baseline

Category II (Indeterminate)
Any of the following:
• Irregular rhythm
• Presence of FHR decreases from the baseline
• Tachycardia (baseline >160 bpm ≥ 10 minutes in duration)
• Bradycardia (baseline <110 bpm ≥ 10 minutes in duration)
Question 6

Category III fetal heart rate can be identified via intermittent auscultation.

a. True
b. False
Category III

Must be absent variability or sinusoidal pattern.

Adapted from ACNM(2010).
Clinical Bulletin no. 11 Intermittent Auscultation for Intrapartum Fetal heart rate surveillance.
Journal of Nurse Midwifery 55 P. 397-403.
Characteristics indicate normal fetal response

Characteristics indicate indeterminate fetal response

Characteristics indicate abnormal fetal response

Increase frequency/duration of auscultation, continue or initiate or trouble shoot EFM

If using IA or intermittent EFM, convert to continuous EFM

Return to less intensive assessment when findings become normal (Category I)

Initiate Intrauterine Resuscitation

Continue auscultation or EFM as indicated for maternal and fetal risk assessment and stage of labor

Adapted from: AWHONN (2015). Fetal Monitoring Principles and Practices. AWHONN. WASHINGTON, DC.
Documentation of the Auscultated Fetal Heart Rate

• Baseline rate
• Rhythm
• Increases of fetal heart rate
• Decreases of fetal heart rate
AWHONN recommends 1:1 nurse-woman ratio during the active phase and second stage of labor (AWHONN, 2010)

Benefits:
- One to One Labor Support

Challenges:
- Staffing realignment
- More patients than providers
- Potential costs associated with meeting recommended ratios
Education and Training

• Education
  • Differences between IA and EFM
  • Patient selection criteria
  • Evaluation of uterine activity by palpation
  • Application and use of Leopold’s Maneuver (assist in optimal point for auscultation
  • Procedure or technique for auscultation
  • Interpretation or classification of auscultation findings
  • Management of indeterminate or abnormal findings
  • Competency validation
    • On-going education, guided clinical experience, skills validation
• Current Studies
• Do not support idea that use of EFM is “safer” than IA in low risk patients
• Compared with IA, continuous EFM
  • No significant difference with overall perinatal death rates but did show a reduction in neonatal seizures (Alfirevic, 2013)
    • Increase in instrumented births
    • Increase in cesarean births
Future Directions in Research

(AWHONN Position Statement, Fetal Heart Monitoring, 2015)

- Efficacy of FHM that includes standardized definitions and FHM terminology
- Efficacy of interventions used in response to fetal monitor findings
- Effect of uterine activity on fetal oxygenation
- Effect of EFM on a woman’s labor experience and outcomes
- Effect of staffing on optimal patient outcomes related to fetal assessment and intervention
- Identification of optimal information technology
- Comparison of patient outcomes and quality indicators when using auscultation and palpation versus EFM
“There will be some new studies that look at electronic fetal monitoring and intermittent auscultation in the low-risk population in a manner that is actually sound and capable of producing high-quality scientifically sound and capable of producing high-quality evidence. Neither modality will be dismissed as not worthy, solely on the basis of low-quality evidence, bias, or ignorance. Women and families will be provided with information that is accurate, including the limitations of current evidence. Neither electronic fetal monitoring nor intermittent auscultation will be indiscriminately applied, but rather an approach that individualizes risks and benefits and includes informed decision making will be come the new normal. Technology will not be seen as “evil” or “good” but simply as what it is, a tool, an option, a choice to be objectively and unemotionally evaluated and applied as need.”

References available upon request
Questions?

Comments?
Remember

- Fax or email attendance list to WAPC
  - fax: 608-285-5004
  - email: wapc@perinatalweb.org

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- Continuing Education Certificate will be sent via email upon completion of evaluation.

- Archived version

- Become a member of WAPC! Join online: https://www.perinatalweb.org/n-pay/membership.asp

- Save the date for the 2016 WAPC Annual Perinatal Conference April 24-26, 2016, at the Osthoff Resort, Elkhart Lake.

- Look for 2016 Series information – coming soon!
Thank-you