



## **Moving Evidence Into Practice:**

**Making Intermittent Auscultation the Norm in the Hospital Setting**

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# Disclosures

- Cathy Emeis has no relevant financial disclosures
- Sally Hersh has no relevant financial disclosures
- Michele Megregian has no relevant financial disclosures

# Objectives

- Describe the historical context for methods of FHR assessment in the U.S.
- Compare and contrast potential harms and benefits of CEFM and IA for low-risk laboring women and their neonates
- Explore considerations for introducing an IA protocol in a hospital setting
- Describe the role of shared decision making (SDM) in midwifery care and informed consent in fetal heart rate assessment in labor

# Evolution of Continuous EFM

- Continuous electronic fetal heart rate monitoring (cEFM) has been called:
  - “a cautionary tale of unintended consequences” (Freeman, 2007)
  - a “failure” that “could have, and should have, been predicted and thus avoided” (Grimes & Peipert, 2010)
  - as “no better than tossing a coin in its ability to predict abnormal outcomes” (Costantine & Saade, 2012)

Costantine & Saade *Semin Perinatol* 2012;36(5):379-383

Freeman *Neurotherapeutics* 2007;4(3):549-554

Grimes & Peipert *Obstet Gynecol* 2010;116 (6):1397-1400

# Development of EFM: 1960s, 1970s

- Goal of EFM
  - To eliminate intrapartum stillbirth
  - To reduce rates of brain damage and/or cerebral palsy
- Became commonplace before randomized controlled trials (RCT) were undertaken

Stout & Cahill Clin Perinatol 38 (2011) 127–142  
ACNM Clinical Bulletin No. 11 2010



# FHR Assessment in Contemporary Intrapartum Care

- cEFM ubiquitous in the U.S.
  - cEFM used in 85.2% of approximately 3.4 million live births (2002)
- Despite lack of evidence for improvement in outcomes and its significant contribution to rise in Cesarean delivery rate
- Despite recommendations from professional organizations that IA and EFM are both considered acceptable methods of fetal surveillance during active labor for women without complications

# Intermittent Auscultation

- Listening to Mothers II: Interviews and surveys
- Sample: 1573 women who had singleton births 2005, phone interviews (n=200) or surveys (n=1373)
  - 9/10 women in labor (94%) used EFM, either alone (79%) or in combination with handheld device (15%).
  - 4%: monitored intermittently
  - 3%: not attached to fetal monitor; exclusively used handheld device

[http://www.childbirthconnection.org/pdfs/LTMII\\_report.pdf](http://www.childbirthconnection.org/pdfs/LTMII_report.pdf)

# Intermittent Auscultation<sup>2</sup>

- Intermittent Auscultation (IA) plus fetal scalp pH sampling
  - Prior to the development of cEFM was the standard of care for assessment of fetal well-being
- Early RCTs compared IA with cEFM
  - Most expert organization recommendations for assessment of fetal well-being based on protocols from early randomised trials (ACOG, ACNM, AWHONN, SGOC, RCOG)

ACNM Clinical Bulletin No. 11, 2010

Stout & Cahill Clin Perinatol 38 (2011) 127–142

AWHONN, FHR Auscultation, 2nd ed.



# Summary of RCTs Comparing IA to cEFM During Labor

- Multiple RCTs have been performed since adoption of EFM as the standard of care during labor
- 2006 first meta-analysis of 11 RCTs
  - >33,000 women
- 2013 Updated 2013; 13 RCTs
  - > 37,000 women
  - No change to conclusions

Alfirevic, Devane, & Gyte, CDSR, Issue 3, CD006066 (2006)

Alfirevic, Devane & Gyte, CDSR, Issue 5, CD006066 (2013)

# Summary of RCTs Comparing IA to cEFM During Labor<sup>2</sup>

- Compared with IA, cEFM:
  - Showed no significant improvement in overall perinatal death rate
  - Associated with a halving of neonatal seizures\*
  - No significant difference in the cerebral palsy rates
  - Showed significant increase in CD rate
  - Showed slight increase in instrumental delivery rate

# Studies Comparing cEFM to IA

Author	Year	Design	N	CD Rate	Neonatal Outcomes
Renou et al <i>AJOG</i> , 126(4)	1976	Prosp. CC  Risk status: high	440	Ø diff	Ø diff: Apgars ↑ NICU for IA
Haverkamp et al <i>AJOG</i> , 125(3)	1976	Prospective Randomized  Risk status: high	483	↑ EFM group	Ø diff: Apgars, pH, NICU, seizures, intubations
Kelso et al <i>AJOG</i> , 131(5)	1978	Prospective Randomized Risk status: Normal	504	↑ EFM group	Ø diff: Apgars, NICU, pH
Haverkamp et al <i>AJOG</i> , 134(4)	1979	Prospective Randomized	690	↑ EFM group	Ø diff: Apgars, NICU, pH

# Studies Comparing cEFM to IA<sub>2</sub>

Author	Year	Design	N	CD Rate	Neonatal Outcomes
Wood et al <i>AJOG</i> , 141(5)	1981	Prosp. Randomized  Risk status:normal	504	↑ EFM group	Ø diff: Apgars Neurologic symptoms
MacDonald et al <i>AJOG</i> , 152 (5)	1985	Prospective Randomized  Risk status: mixed high and normal	12,964*	Ø diff	Ø diff: Apgars, ↓ seizures EFM, @ 1 yr F/U Ø diff in severe disabilities
Vintzileos et al <i>Obstet &amp; Gynecol</i> , 81 (6)	1993	Prospective Randomized  Risk status: mixed high and normal	1428	↑ EFM group	Ø diff: Apgars, NICU, seizures

# Intermittent Auscultation<sup>3</sup>

- 2010: ACNM published Clinical Bulletin on IA based on best available scientific data
  - Review of evidence and recommendations for use of IA
  - Emphasis on informed choice
  - Consideration of patient safety



# Intermittent Auscultation Technique

- Performed with fetoscope or doppler
  - Some evidence that doppler is a better match to EFM
- Intermittent listening and counting of fetal heart rate in relation to contractions
- Varying protocols on technique of counting



# Intermittent Auscultation





# Procedure

1. Abdominal palpation (Leopold's)
2. Assessment of uterine activity
3. Determine the maternal pulse rate
4. Doppler/fetoscope over fetal back/thorax
5. Determine FHR baseline
6. Count FHR after UC for 30-60 sec.
7. Note increases or decreases
  - multiple strategies





# Intermittent Auscultation Methods and Evidence

- Limited evidence to recommend a particular method.
- 12 RCTs comparing methods of auscultation reviewed in AWHONN publication on IA
- Cochrane Review on IA of FHR in labor for fetal well-being by Martis et al (2010) (*IA of FHR in labour for fetal well-being*)
  - *Protocol stage*
  - *Objective: evaluate the effectiveness and safety of methods and timing used to intermittently auscultate the FHR during labor*

# Intermittent Auscultation Methods

- Single count method
  - 30- 60 seconds after a uterine contraction
- Multiple count method during and after contractions
  - Detects fetal heart rate (FHR), rhythms, accelerations, presence of decelerations *reliably*
  - Does not determine type of decelerations or baseline variability *accurately*
  - Despite this, RCTs of IA and EFM reveal equivalent neonatal outcomes

# Intermittent Auscultation: Frequency

- Frequency of auscultation
  - No evidence available on best practice
  - Expert groups have varying protocols
  - Low risk women = women at low risk for utero-placental insufficiency during labor
    - Active phase: q15-30 minutes
    - Second stage prior to pushing: q 15 min
    - Second stage, pushing: q 5 min if no clinical indications for more frequent assessment

# Benefits and Limitations of IA

Benefits	Limitations
Neonatal Outcomes comparable with cEFM	Certain FHR characteristics not reliably be detected (variability, certain decelerations, sinusoidal patterns)
Equip less costly	Can be perceived as disruptive
Promotes high-touch/low tech	Inability to review tracing
↓ CD rate with IA in most trials	In some conditions, efficacy may be limited (eg, obesity)
Non-invasive	
Can be used anywhere	
Freedom of movement enhanced	

Adapted from AWHONN, FHR Auscultation, 2nd ed., 2008



# Documentation

- Baseline rate
- Rhythm
- Increases and/or decreases (if present)
- If non-reassuring FHR characteristics heard
  - Time detected
  - Interventions
  - Continued FHR and maternal assessments to evaluate response to interventions
  - Communication to mother and team



# Special Considerations

- Admission to L&D
- IOL and augmentation
- Epidural
- Labor after cesarean

# Fetal Heart Rate Characteristics by IA or cEFM

Characteristic	Fetoscope	Doppler w/o paper printout	cEFM
Variability	No	No	Yes
Baseline	Yes	Yes	Yes
Acceleration	Detects increases	Detects increases	Yes
Deceleration	Detects decreases	Detects decreases	Differentiates deceleration types
Rhythm	Yes	Yes	Yes
FHR Double- counting or half-counting	Can clarify	May double or half count	May double or half count
Differentiation b/ FHR and MHR	Yes	May detect MHR	May detect & record MHR

Adapted from ACNM Clinical Bulletin on IA No.11 March 2010



# Why Does cEFM Use Remain Ubiquitous Among Low-Risk Women?

- Reasons cited for perpetuation of use of cEFM in low risk women:
  - Habit
  - Liability concerns
  - Adequacy of staffing
  - Training of staff
  - Resistance to evidence-based practice
  - Convenience
  - Challenges related to consent of women in labor





# Ethics Principles

- Informed Consent
  - Respect for patient autonomy
  - Origin in legal and research arenas
  - PARQ
- Shared Decision Making
  - Exchange of information, personal values, decisional authority
  - Origin in quality assurance movement
  - Should be based on best available evidence



# Shared Decision Making

- Preference equipoise
  - Equal medical options/outcomes, choice of intervention based on patient preference
- Unclear data
  - Uncertain evidence, conflicting studies
  - Decisional conflict



# Midwifery Model of Care

- Respect for patient autonomy / woman-centered care
- Exchange of information, values, preferences
- Partnership in exploration of uncertain, inconclusive, and conflicting evidence
- Decision-making authority lies primarily with the woman
- Trust in the innate ability of mother and fetus (normal physiologic pregnancy and birth)

# SDM/MMOC and IA

- Can the shared decision making model be applied to fetal monitoring in labor?
  - Values conflict
  - Decisional conflict
  - Unclear evidence
  - Technology imperative and entrenched systems



# MMOC and IA

- Are midwives offering women a choice of fetal monitoring methodology?
  - Time
  - Patient decision aids
  - Birth plans
  - System barriers to IA implementation

# Barriers to Using IA in Low-Risk Laboring Women

- Medical-legal concerns
- Lack of support
- Lack of adequate number of Dopplers
- Presence of EFM in every labor room
- Staffing, provider time constraints
- Resistance to change
- Lack of maternal knowledge

# Question for Audience

- Do you provide birth care in the home or out-of-hospital birth center?
  - Which type of FHR counting technique do you use?
    - Single count during and after contraction; frequency based on stage of labor
    - Multiple count method during and after contractions; frequency based on stage of labor

# Question for Audience

Excluding those who provide birth care in the home or out-of-hospital birth center:

- Is IA offered in your work place?
- Which type of IA technique do you employ?
  - Single count during and after contraction; frequency based on stage of labor
  - Multiple count method during and after contractions; frequency based on stage of labor



# Policy

- Do you have a current policy for IA in your setting?

# Question for Audience

- Do you experience any of these barriers to offering IA in your practice?
  - Adequacy of nursing staffing
  - Concerns regarding liability
  - Physician resistance
  - Nursing resistance
  - Inability to properly consent women in labor

# Question for Audience

- Of those who replied that IA is available:  
are you collecting data on outcomes?
  - Have you shared your outcomes through benchmarking,(ACNM does not collect this)(AABC presumes IA use among participants?)
  - or published your outcomes?

# Question for Audience

- Did you receive training in IA during your midwifery education?
- Since your midwifery education?

# Question for Audience

Do the nurses with whom you work receive training in IA?



# Introducing IA into Your Hospital Setting

- Stakeholders
  - Nursing
  - Physicians
  - Midwives
  - Patients
- Enlist champions

# Strategies/Tips to Promote IA in Your Setting

AWHONN, 2008

- Develop a philosophy that embraces normal labor culture, minimization of interventions
- Provide review of current evidence on EFM and IA to all stakeholders
- Develop an IA policy for your unit
- Provide, orientation, education, skill development for all HC professionals
- Model the use of IA-- CNMs on staff
- Recruit champions: multidisciplinary



# Strategies/Tips to Promote IA in Your Setting

AWHONN, 2008

- Provide dopplers in every room
- Promote nursing care in the labor room
- Consider implementation change in stages
- Celebrate and share successes
- Conduct audits for QA/QI
- Collect and disseminate your data
- Develop patient education strategies
- Consider replacing the routine admission EFM strip with IA for low risk women



# Introducing IA into Your Hospital Setting

- Using evidence to change practice
  - Physiologic birth tool kit
  - ACNM practice bulletin
  - Birth Centers Study II
  - AWOHNN
    - *Fetal Heart Rate Auscultation, 2<sup>nd</sup> ed.*
  - ACOG
  - Data on prevention of first Cesarean





# Recommendations

- Midwives as leaders/experts in IA
- Standardization of definition
- Collect and disseminate your data
- Plethora of research questions waiting to be studied

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- Thank you!