



EFM, AUSCULTATION, & “INTERMITTENT EFM”: FACT VS. FICTION

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WHO AM I?

RN since 1979

CNM since 1982

Lawyer since 1991

Currently self-employed as a perinatal educator

Practice experience includes all levels of perinatal care, as well as academic practice at Northwestern University Medical School



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DISCLOSURE

In the interest of full disclosure, I wish to disclose my relationship with Clinical Computer Systems, Inc., as a consultant and co-developer of their “E-Tools” software.

I am also on the AWHONN board of directors for thru 2018, however nothing I present today should be construed as the position or opinion of AWHONN. I present information today as a perinatal educator.

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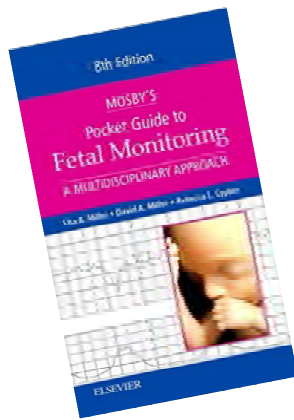
DISCLAIMER

Although I am a member of the Illinois State Bar Association and a licensed attorney in the state of Illinois, I am here today as a *nurse educator*, not a lawyer.

Nothing in the program should be construed as legal advice. In other words, if you need legal advice, retain a practicing attorney!

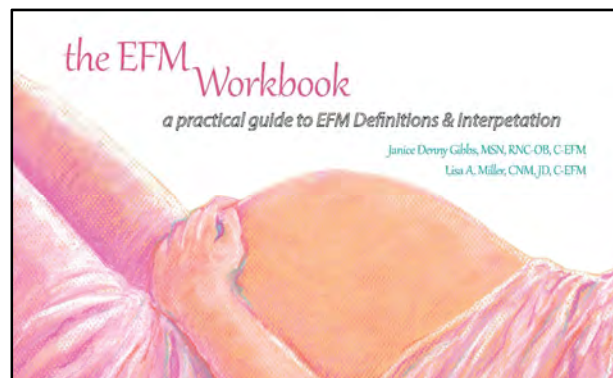
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ADDITIONALLY, I AM CO-AUTHOR OF TWO EFM TEXTBOOKS -
MOSBY'S POCKET GUIDE:
"FETAL MONITORING: A MULTIDISCIPLINARY APPROACH",
AND "FETAL MONITORING" BY LIPPINCOTT



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And the EFM workbook, a companion workbook to the
Mosby Pocket Guide, allowing practice with NICHD
terminology & tracing interpretation

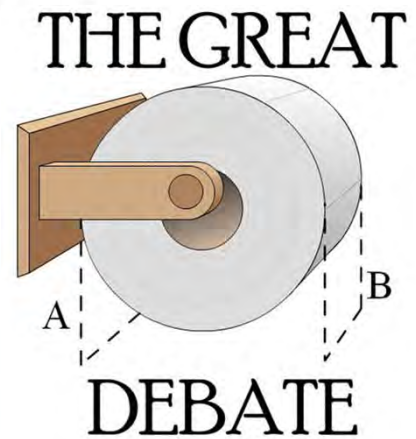
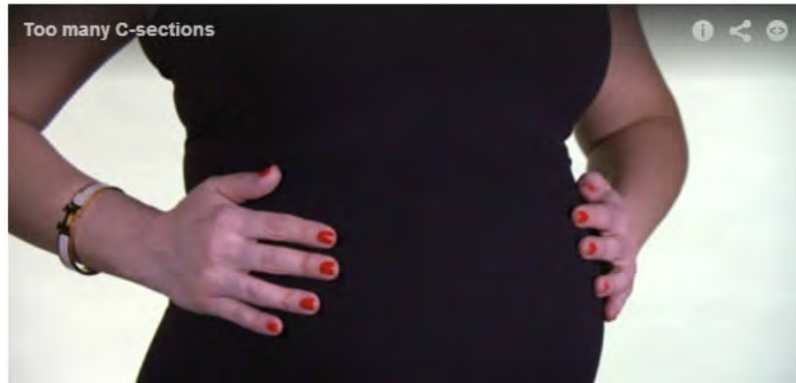


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Childbirth: What to Reject When You're Expecting

10 procedures to think twice about during your pregnancy

By Consumer Reports
Last updated: April 13, 2018



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AWHONN PRACTICE MONOGRAPH



Fetal Heart Rate Auscultation, 3rd edition

Kirsten Wisner & Carrie Holschuh

Correspondence

Kirsten Wisner, MS, RNC-OB,
CNS, C-EFM, Salinas Valley
Memorial Healthcare System,
450 E. Romie Lane, Salinas, CA
93901. kwisner@svmh.com

MESH Terms

Auscultation
Heart Rate, Fetal

ABSTRACT

The use of intermittent auscultation (IA) for fetal surveillance during labor decreased with the introduction of electronic fetal monitoring (EFM). The increased use of EFM is associated with an increase in cesarean births. IA is an evidence-based method of fetal surveillance during labor for women with low risk pregnancies and considered one component of comprehensive efforts to reduce the primary cesarean rate and promote vaginal birth. Many clinicians are not familiar with IA practice. This practice monograph includes information on IA techniques; interpretation and documentation; clinical decision-making and interventions; communication; education, staffing, legal issues, and strategies to promote implementation of IA into practice.

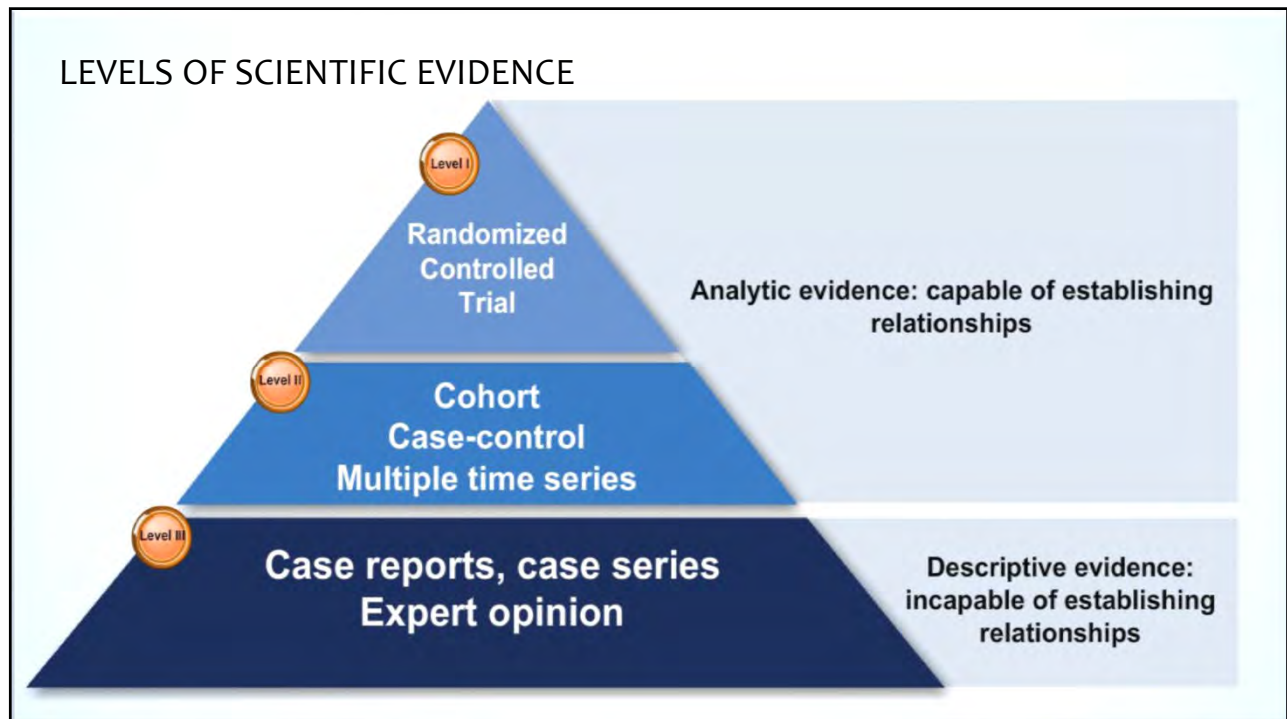
doi: 10.1016/j.nwh.2018.10.001

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OUR OBJECTIVES

- Review the evidence on EFM versus IA
- Discuss a variety of recommendations for IA
- Identify the components of informed consent
- List steps hospitals should take to incorporate IA
- Describe the role of future research, **and the inherent difficulties to future research**

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GRADING OF RECOMMENDATIONS

Level A – recommendations are based on good and consistent scientific evidence.

Level B – recommendations are based on limited or inconsistent scientific evidence.

Level C – recommendations are primarily based on consensus and expert opinion.

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HISTORICAL POINTS

The “tipping point” for EFM overtaking IA as the ubiquitous method of fetal surveillance in the intrapartum period occurred around 1981/1982.

Prior to that point, there were very few monitors, even in academic centers. For example, in 1979 at Northwestern’s Prentice Women’s hospital, there were 10 labor rooms and only 3 fetal monitors. A “Fetal Monitoring Priority Protocol” was used to decide which patients would receive EFM. The majority of patients were monitored with auscultation and palpation.

The overall C-section rate in 1970 was around 5%, but it increased to about 15% by 1978, and today the rate is 32% overall, 25.7% for low risk (Births: Preliminary Data for 2015; NVSR, Vol. 65, #3, June 2016)

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EFM & THE CESAREAN SECTION RATE

While it is true that meta-analyses of EFM versus IA have shown an increase in the C-section rate associated with EFM, it is interesting to note that all of the studies after 1980 showed no difference in overall the C-section rate between auscultated versus electronically monitored groups.

The 4 studies that showed the very significant increase in the rate of C-sections were conducted between 1976-1979, and included 2,027 patients.

There were 8 studies done between 1981-2006 that actually showed *no difference in C-section rates*, these studies included 20,740 patients.

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Continuous cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour (Review)

Alfirevic Z, Devane D, Gyte GML



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QUALITY OF THE INCLUDED STUDIES

Of the 12 studies that compared EFM to IA, only two were considered to be of high methodological quality, four were considered to be of low methodological quality, and for six of the studies included the methodological quality was unclear.

The primary outcomes that were reviewed included perinatal mortality, neonatal seizures, cerebral palsy, cesarean section, instrumental vaginal birth (for the most part, forceps), and cord blood acidosis.

None of the studies were done using standardized NICHD nomenclature, (all but one of the studies predated the first NICHD workshop report) and in some of the studies there was no information on what criteria were used to determine “fetal distress”.

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QUALITY OF THE INCLUDED STUDIES

Outcome	Number of patients/studies	GRADE (very low-high)
Perinatal mortality	33,513 patients/11 studies	Low quality
Neonatal seizures	32,386 patients/9 studies	Moderate quality
Cerebral palsy	13,252 patients/2 studies	Low quality
Cesarean section	18,861 patients/11 studies	Low quality
Instrumental vaginal birth	18,615 patients/10 studies	Low quality
Cord blood acidosis	2494 patients/2 studies	Very low quality

GRADE Working Group grades of evidence

High quality: Further research is very unlikely to change our confidence in the estimate of effect.

Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

Very low quality: We are very uncertain about the estimate.

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DUBLIN RCT 1985

EFM group

IFE & Toco, doppler only if IFE not feasible

Fetal scalp sampling as back-up, delivery for pH <7.2, possible delivery for 7.2-7.25

IA group

IA with a Pinard for 60 seconds following a contraction “at least every 15 minutes in first stage and during every interval between contractions in the second stage

Fetal scalp sampling or delivery for FHT's >160 or <100 for 3 contractions

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DUBLIN RCT 1985

- No significant difference in C-section (2.4 EFM vs. 2.2 IA) against a background rate of less than 3%
- Both groups had the backup test of fetal scalp pH, at that time no one differentiated between respiratory versus metabolic acidemia
- Biggest difference between the two groups was a reduction in neonatal seizures in the EFM group, but follow-up did not reveal any long-term significance.

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Intermittent auscultation (IA) of fetal heart rate in labour for fetal well-being (Review)

Martis R, Emilia O, Nurdianti DS, Brown J

Intermittent auscultation (IA) of fetal heart rate in labour for fetal well-being (Review)
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SUMMARY OF FINDINGS FOR THE MAIN COMPARISON *[Explanation]*

Intermittent auscultation of fetal heart rate in labour for fetal well-being - Intermittent electronic fetal monitoring (CTG) (inconsistent/ opportunistic paper tracing) versus routine Pinard (outcomes for the baby)

Patient or population: women in established labour and their babies.
Setting: all studies were conducted in Africa (Zimbabwe and Uganda).
Intervention: electronic fetal monitoring (CTG) without paper tracing.
Comparison: routine Pinard.

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	n. of participants (studies)	Quality of the evidence (GRADE)	Comments
	Risk with Pinard	Risk with routine electronic fetal monitoring				
Apgar < 7 at 5 minutes	29 per 1000	19 per 1000 (7 to 52)	RR 0.66 (0.24 to 1.83)	633 (1 RCT)	⊕⊕○○ VERY LOW ^{1,2}	Low event rate. Study reported Apgar score < 6 at 5 minutes.
Cord blood acidosis	0 per 1000	0 per 1000 (0 to 0)	not estimable	(0 studies)		No data reported for cord blood acidosis in the included studies
Neonatal seizures	29 per 1000	1 per 1000 (0 to 25)	RR 0.05 (0.00 to 0.89)	633 (1 RCT)	⊕⊕○○ LOW ^{1,3}	Low event rates. Routine Pinard group (9/315) compared to the intermittent EFM (CTG) group (0/318)

Intermittent auscultation (IA) of fetal heart rate in labour for fetal well-being (Review)
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Perinatal mortality	29 per 1000	25 per 1000 (10 to 64)	RR 0.88 (0.34 to 2.25)	633 (1 RCT)	⊖○○○ VERY LOW ^{1,2}	Neonatal deaths included, unable to separate out from reported data. Low event rates 8/318 for intermittent EFM (CTG) group and 9/315 for routine Pinard group
Composite of mortality and serious morbidity	0 per 1000	0 per 1000 (0 to 0)	not estimable	(0 studies)		No data reported for a composite of mortality and serious morbidity in the included studies.
Cerebral palsy	0 per 1000	0 per 1000 (0 to 0)	not estimable	(0 studies)		No data reported for cerebral palsy in the included studies.
Neurosensory disability	0 per 1000	0 per 1000 (0 to 0)	not estimable	(0 studies)		No data reported for neurosensory disability in the included studies at either 6 months or 1 year

¹ The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).
 CI: Confidence interval; RR: Risk ratio; OR: Odds ratio;

GRADE Working Group grades of evidence

High quality: we are very confident that the true effect lies close to that of the estimate of the effect
Moderate quality: we are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low quality: our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect
Very low quality: we have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

¹ Blinding of participants and health professionals not possible; high risk of performance bias and it is unclear if outcome assessors were blinded. Downgraded one level.

² Evidence of imprecision; single trial with low event rate and wide 95% CI crossing the line of no effect. Downgraded two levels.

³ Evidence of imprecision, evidence based on a single trial with low event rates. Downgraded one level.

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Authors' conclusions

Using a hand-held (battery and wind-up) Doppler and intermittent CTG with an abdominal transducer without paper tracing for IA in labour was associated with an increase in caesarean sections due to fetal distress. There was no clear difference in neonatal outcomes (low Apgar scores at five minutes after birth, neonatal seizures or perinatal mortality). Long-term outcomes for the baby (including neurodevelopmental disability and cerebral palsy) were not reported. The quality of the evidence was assessed as moderate to very low and several important outcomes were not reported which means that uncertainty remains regarding the use of IA of FHR in labour.

As intermittent CTG and Doppler were associated with higher rates of caesarean sections compared with routine Pinard monitoring, women, health practitioners and policy makers need to consider these results in the absence of evidence of short- and long-term benefits for the mother or baby.

Large high-quality randomised trials, particularly in low-income settings, are needed. Trials should assess both short- and long-term health outcomes, comparing different monitoring tools and timing for IA.

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BASED ON THIS REVIEW OF THE EVIDENCE, WHAT SHOULD WE BE TELLING OUR PATIENTS...

About the evidence regarding EFM versus IA?

About making informed choices?

About using one over the other, or both?

About how much we know versus how much we don't know?

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INFORMED CONSENT

A legal concept that has several requirements:

1. A discussion about what the procedure entails;
2. Must include risks, benefits, alternatives and future implications;
3. Should include an opportunity to ask questions;
4. Does not require a signed paper, but some documentation is prudent.

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INFORMED CONSENT CONSIDERATIONS WITH IA

1. A discussion of the indications for the treatment. In the case of IA, this may actually manifest as a discussion that covers the lack of indications for EFM.
2. A description of the procedure for IA, which could include the technique (Doppler vs fetoscope) as well as the frequencies of IA for the different stages and phases of labor.
3. A frank discussion of risks and benefits, including the quality limitations of the studies to date and the grade levels of the recommendations being made.
4. A discussion of the alternatives, which in the case of IA could be continuous EFM or some combination of intermittent EFM with IA.

Miller, JPNN, 2015

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COCHRANE DATABASE POINTS ON THE ISSUE OF AUSCULTATION FREQUENCY...

Specifically note lack of empirical data on optimal frequency

Cite consensus in guidelines (ACOG, SOGC, RANZOG, NCCWCH) for auscultation frequencies of “at least” every 15 minutes in first stage and every 5 minutes in second stage, for at least 60 seconds.

Admits that these guidelines were initially established for clinical trials based on “common sense” rather than any research evidence.

States compliance may pose a “significant challenge”

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TABLE 4 ASSESSMENT AND DOCUMENTATION OF FETAL STATUS USING INTERMITTENT AUSCULTATION^{a,b}

	Latent phase (< 4 cm)	Latent phase (4-5 cm)	Active phase (≥ 6 cm)	Second stage (passive fetal descent)	Second stage (active pushing)
Low risk without oxytocin	Insufficient evidence to make a recommendation. Frequency at the discretion of the midwife or physician.	Every 15-30 minutes	Every 15-30 minutes	Every 15 minutes	Every 5-15 minutes

Note. From “Fetal Heart Monitoring,” by the Association of Women’s Health, Obstetric and Neonatal Nurses, 2018, *Nursing for Women’s Health*, 22, p. 507. Copyright 2018 by the Association of Women’s Health, Obstetric and Neonatal Nurses.

^aFrequency of assessment should always be determined based on the status of the mother and fetus and at times will need to occur more often based on their clinical needs, e.g., in response to a temporary or ongoing change.

^bSummary documentation is acceptable, and individual hospital policy should be followed.

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TABLE 1 FETAL HEART RATE CHARACTERISTICS DETERMINED VIA AUSCULTATION VERSUS ELECTRONIC MONITOR

FHR Characteristic ^a	Fetoscope	Doppler Device Without Paper Printout	Electronic FHR Monitor
Variability	No	No	Yes
Baseline rate	Yes	Yes	Yes
Accelerations	Detects increases ^b	Detects increases ^b	Yes
Decelerations	Detects decreases	Detects decreases	Differentiates types of decelerations
Rhythm ^c	Yes	Yes	Yes
Double counting or half-counting FHR	Can clarify	May double count or half count	May double count or half count
Differentiation of maternal and fetal heart rate	Yes	May detect maternal heart rate	May detect and record maternal heart rate

Note. From "Intermittent Auscultation for Intrapartum Fetal Heart Rate Surveillance," by American College of Nurse Midwives, *Journal of Midwifery & Women's Health*, 60, p. 627. Copyright 2015 by the American College of Nurse Midwives. Used with permission. FHR = fetal heart rate.

^aDefinitions of each FHR characteristic based on those reported in Macones et al.²⁰

^bPer method described by Paine et al.¹² and Paine et al.¹³

^cDetermined as regular or irregular. None of these devices can diagnose the type of fetal arrhythmia.

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BOX 2 INTERPRETATION OF AUSCULTATION FINDINGS

CATEGORY I

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 rate
- Absence of FHR decreases or decelerations from the baseline

CATEGORY II

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)

Note. From "Fetal Heart Rate Interpretation," by A. Lyndon, N. O'Brien-Abel, and K. R. Simpson, in *Fetal Heart Monitoring Principles and Practices* (5th ed., p. 91), edited by A. Lyndon and L. U. Ali, 2015, Washington, DC: Association of Women's Health, Obstetric and Neonatal Nurses. Copyright 2015 by the Association of Women's Health, Obstetric and Neonatal Nurses.

Suggested strategies for Category 2 findings with IA include increasing the frequency of IA, changing to EFM, and corrective measures (as would be considered with EFM).

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IMPLEMENTATION OF INTERMITTENT AUSCULTATION

- Multidisciplinary involvement and review of evidence/information
- Institutional consensus regarding technique and frequency
- Development of *informed choice* information for patients and families, with antenatal discussion of risks/benefits/limits of current information & evidence
- Provider responsibility for informed consent, nursing responsibility for implementation.
- Education and training for clinicians on both EFM & IA

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Women and Birth 29 (2016) 285–292



Contents lists available at [ScienceDirect](#)

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DISCUSSION

Putting intelligent structured intermittent auscultation (ISIA) into practice

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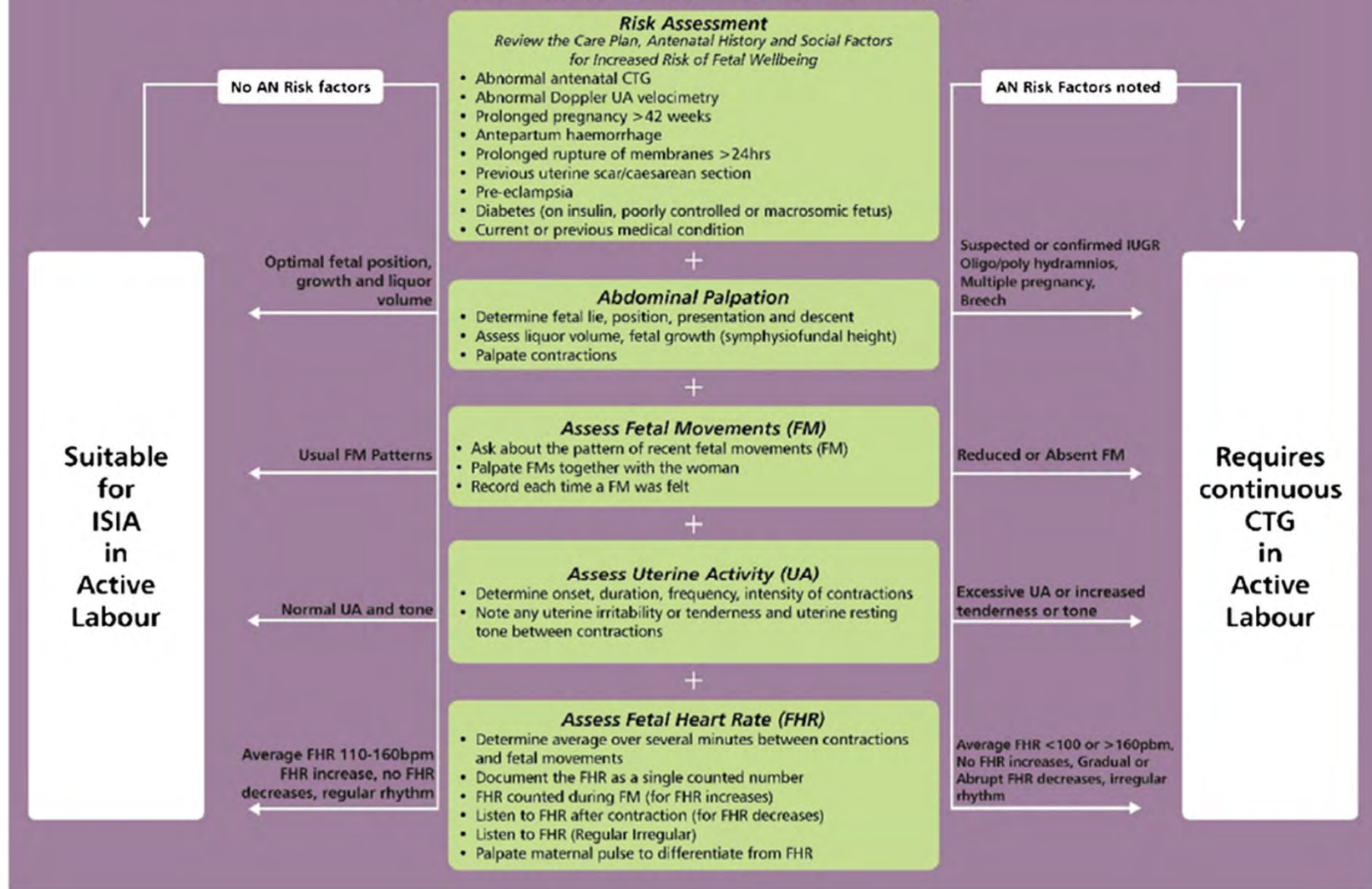
Robyn M. Maude^{a,*}, Joan P. Skinner^a, Maralyn J. Foureur^b

^a Graduate School of Nursing, Midwifery and Health Victoria University of Wellington, New Zealand P O Box 7625, Newtown, Wellington 6242, New Zealand
^b Centre for Midwifery, Child and Family Health, Faculty of Health, University of Technology, Sydney PO Box 123, Broadway, NSW 2007, Australia

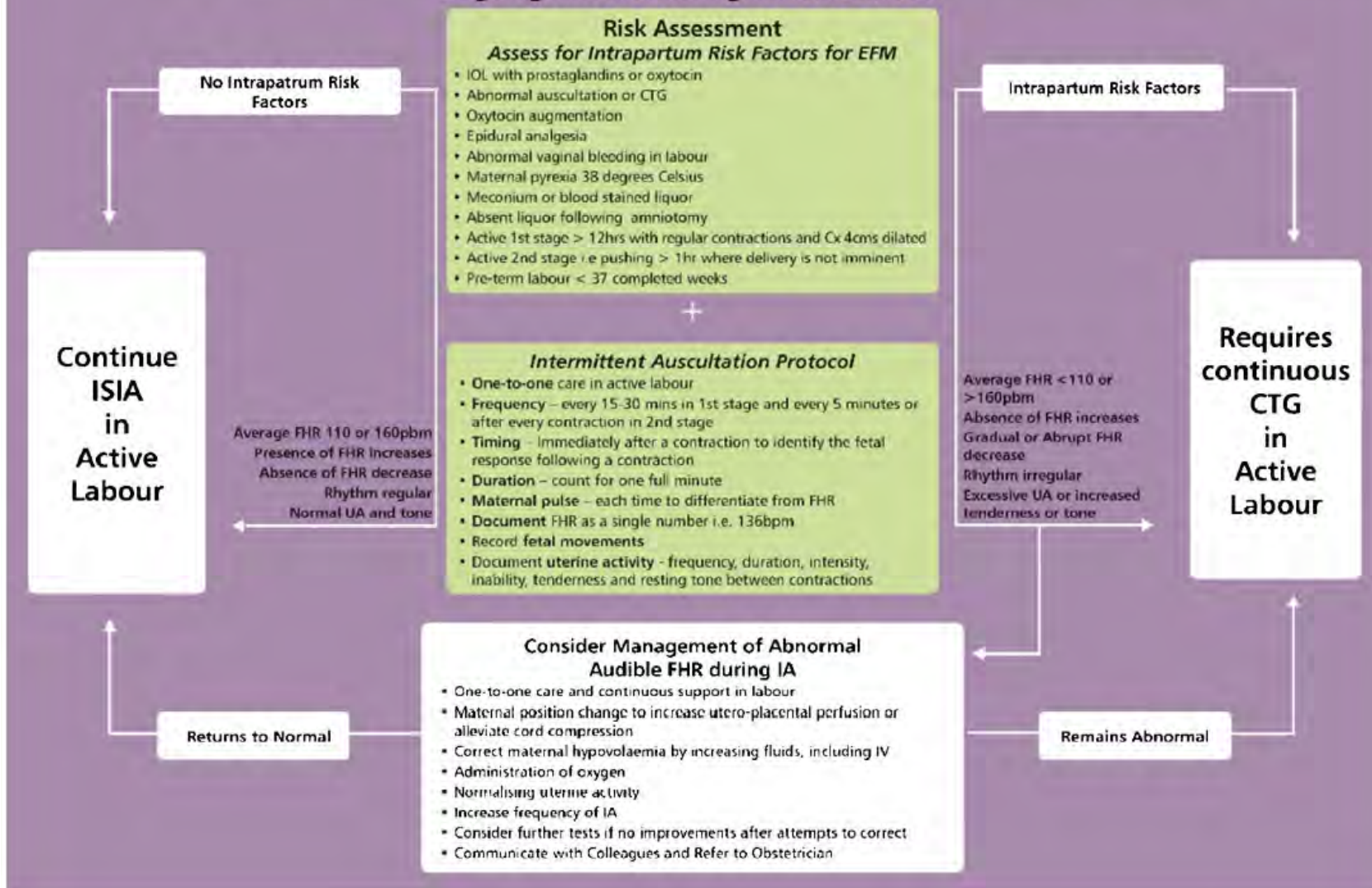
<p>ARTICLE INFO</p> <p><i>Article history:</i> Received 4 August 2015 Received in revised form 30 November 2015 Accepted 4 December 2015</p> <p><i>Keywords:</i> Fetal monitoring Intermittent auscultation Midwifery Decision-making</p>	<p>ABSTRACT</p> <p><i>Background:</i> Fetal monitoring guidelines recommend intermittent auscultation for the monitoring of fetal wellbeing during labour for low-risk women. However, these guidelines are not being translated into practice and low-risk women birthing in institutional maternity units are increasingly exposed to continuous cardiotocographic monitoring, both on admission to hospital and during labour. When continuous fetal monitoring becomes routinised, midwives and obstetricians lose practical skills around intermittent auscultation. To support clinical practice and decision-making around auscultation modality, the intelligent structured intermittent auscultation (ISIA) framework was developed. <i>Aim:</i> The purpose of this discussion paper is to describe the application of intelligent structured intermittent auscultation in practice.</p>
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Intelligent Structured Intermittent Auscultation (ISIA) Informed Decision-Making Framework Admission Assessment or First Contact in Labour



Intelligent Structured Intermittent Auscultation (ISIA) Informed Decision-Making Framework Ongoing FHR monitoring in Active Labour



“INTERMITTENT EFM” — A DANGEROUS MYTH

- Some institutions, for a number of reasons, have opted to institute something they call “Intermittent EFM” where EFM is applied for a period of time and then the woman is *unmonitored by any means*, in some cases for a period of 2 hours or more.
- There is zero evidence for this approach, so please follow IA guidelines whenever a woman is not on EFM.

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HERE ARE MY OPINIONS (LEVEL 3 EVIDENCE)

The risk of either fetal death or neonatal encephalopathy in a healthy low-risk woman is such a rare event it is unlikely we will ever have an adequately powered study to provide real evidence on EFM vs. IA in the low-risk population.

It is not the mode of monitoring chosen but the nurse, and a trained nurse that is allowed to provide one-to-one labor support in family friendly environments is the single most important factor in improving outcomes. It is time to get the public to understand and support a move to trained one-to-one nursing support for every woman in labor



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EFM TRACINGS PRACTICUM

Can we achieve a
shared mental model?



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The NICHD Alone is Not Enough!

Although the progress made by adoption of the NICHD definitions must not be minimized, the NICHD standardized only definitions, it did not provide guidelines for detailed interpretation & management.

Additionally, the propensity of many institutions to focus on summary terms, such as FHR Categories and uterine tachysystole, may create unforeseen opportunities for error.

Let's take a look at Categories, which are simply summary terms...

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NICHD “Three-Tier” Fetal Heart Rate Classification System

Category I – “Normal”

Requires:

- Baseline rate: 110-160 bpm
- Variability: Moderate
- Decelerations: No late, variable or prolonged (i.e., “only earlyies”)

Obstet Gynecol 2008;112:661-6

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NICHD “Three-Tier” Fetal Heart Rate Classification System

Category III – “Abnormal”

Requires one of these 4 patterns:

- Absent variability with recurrent late decelerations
- Absent variability with recurrent variable decelerations
- Absent variability with bradycardia for at least 10 min
- Sinusoidal pattern

Obstet Gynecol 2008;112:661-6

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**EXPERT
OPINION**

“Electronic Fetal Monitoring has the potential to be a source of constant embarrassment or a source of liberating opportunity, this is entirely dependent upon the expectations of the user”


- David A. Miller, MD

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If fetal monitoring is used as a diagnostic test for damaging metabolic acidemia or neurologic injury, it will almost always be an embarrassment



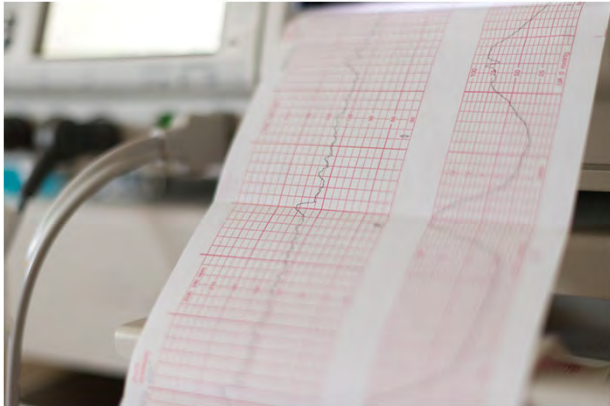
If fetal monitoring is used for its positive predictive value rather than its negative predictive value, it will almost always be an embarrassment



If fetal monitoring decisions are based on random recall rather than evidence-based consensus, error is virtually inevitable



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On the other hand, if fetal monitoring is applied, interpreted and managed *within the well-documented limits of its capabilities*, it can be the difference between success and failure

In fact, if used thoughtfully, fetal heart rate monitoring can be the **“forcing function”** that helps ensure intrapartum management is conducted in accordance with the standard of care

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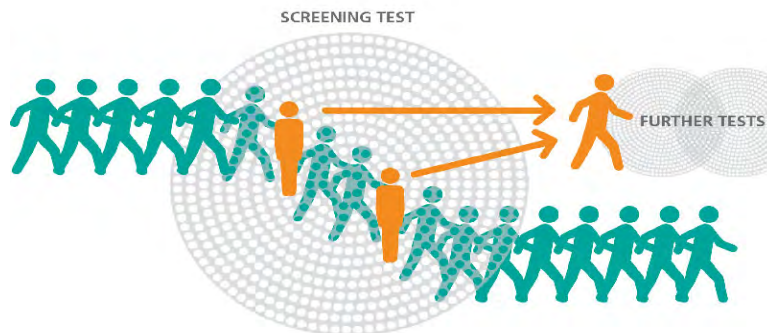
The fact is... most FHR tracings, even those we get concerned about, are able to predict neurologic injury no better than consulting a fortune teller



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Screening vs. Diagnostic

- A diagnostic tool identifies disease; it separates the healthy from the sick.
- A screening tool culls normal, identifying the healthy and leaving behind a group that may or may not be sick...a group that needs further evaluation.
- The problem in EFM is that we do not have any adequate tools for *further evaluation*.



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Hypoxic Ischemic Encephalopathy

- A subset of the broader category of neonatal encephalopathy, hypoxic ischemic encephalopathy (HIE) is a rare event in term infants, with an incidence of approximately 1.5/1000 births.
- Even though it is a rare occurrence, allegations related to EFM and birth asphyxia continue to represent a disproportionate share of obstetric malpractice claims
- This means that in the course of a clinician's career in obstetrics, involvement in litigation is highly likely

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Creating a Shared Mental Model

- Our goal today is to ensure we are all on the same page when it comes to discussing and interpreting intrapartum FHR tracings, as standardization decreases the risk for error.
- We'll have a quick review of fetal oxygenation, and we'll take a simplified approach to interpretation, one that is based on the ***exceptional negative predictive value*** of EFM.
- In other words, we will put EFM in its place as a ***screening*** tool, not a *diagnostic* tool!
- We can discuss management if we have time, but our primary focus this morning is correct use of the NICHD nomenclature and applying the two principles of interpretation.

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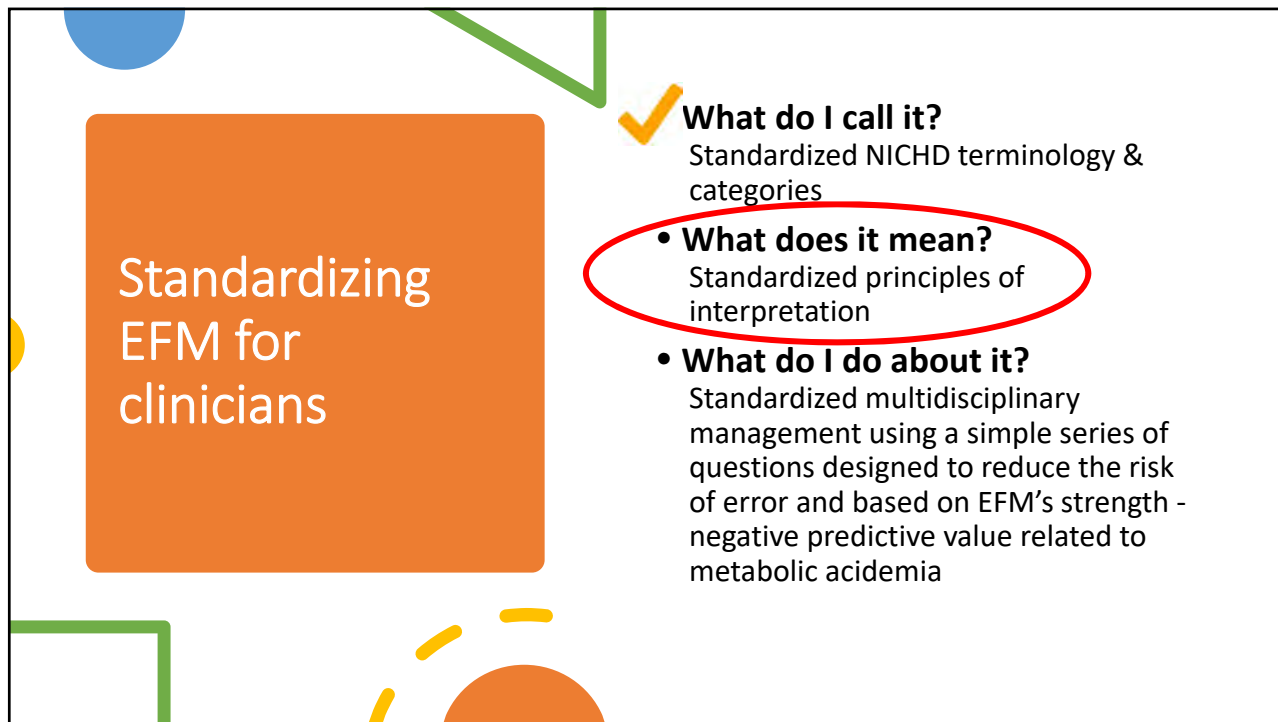
EFM Deconstructed - 3 Questions

- What do we call it?
- What does it mean?
- What should we do about it?

These are the three questions clinicians are faced with *every time* they look at a FHR tracing.

Standardizing our approaches to these questions is crucial to multidisciplinary teamwork, and it will be our focus now.

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Standardizing EFM for clinicians

✓ **What do I call it?**
Standardized NICHD terminology & categories

- **What does it mean?**
Standardized principles of interpretation
- **What do I do about it?**
Standardized multidisciplinary management using a simple series of questions designed to reduce the risk of error and based on EFM's strength - negative predictive value related to metabolic acidemia

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Environment

Lungs

Heart

Vasculature

Uterus

Placenta

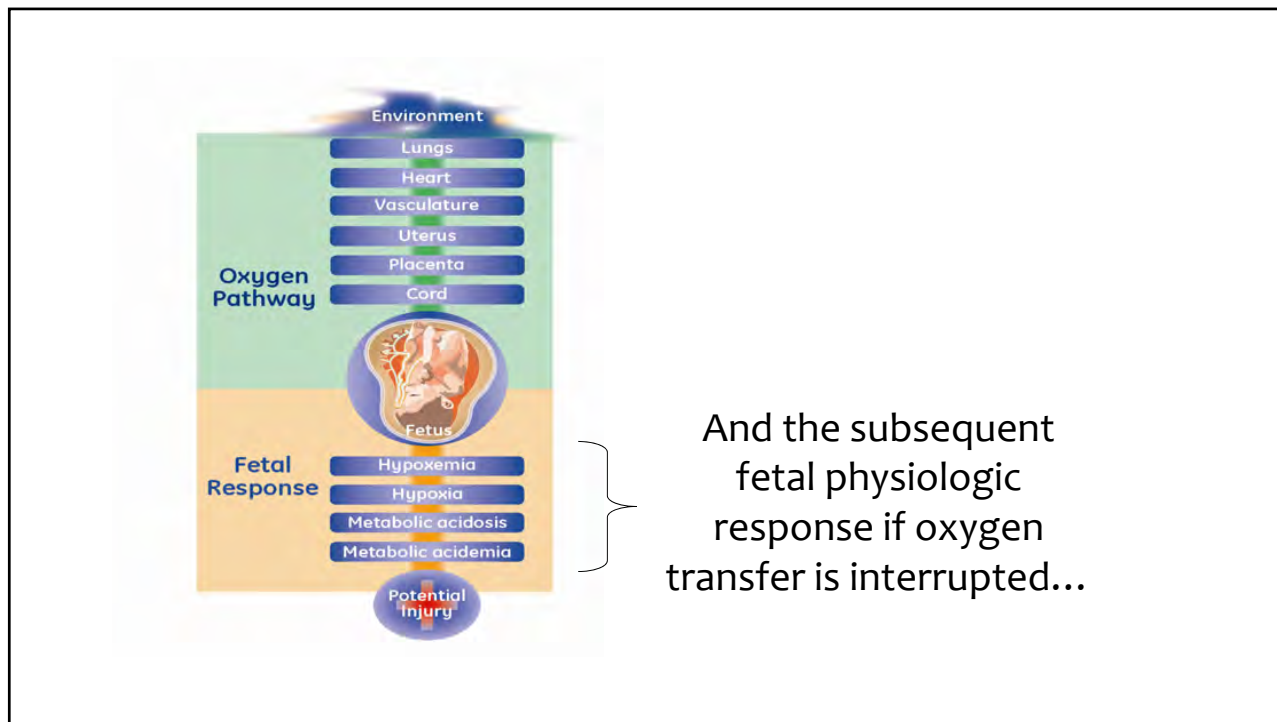
Cord

Fetus

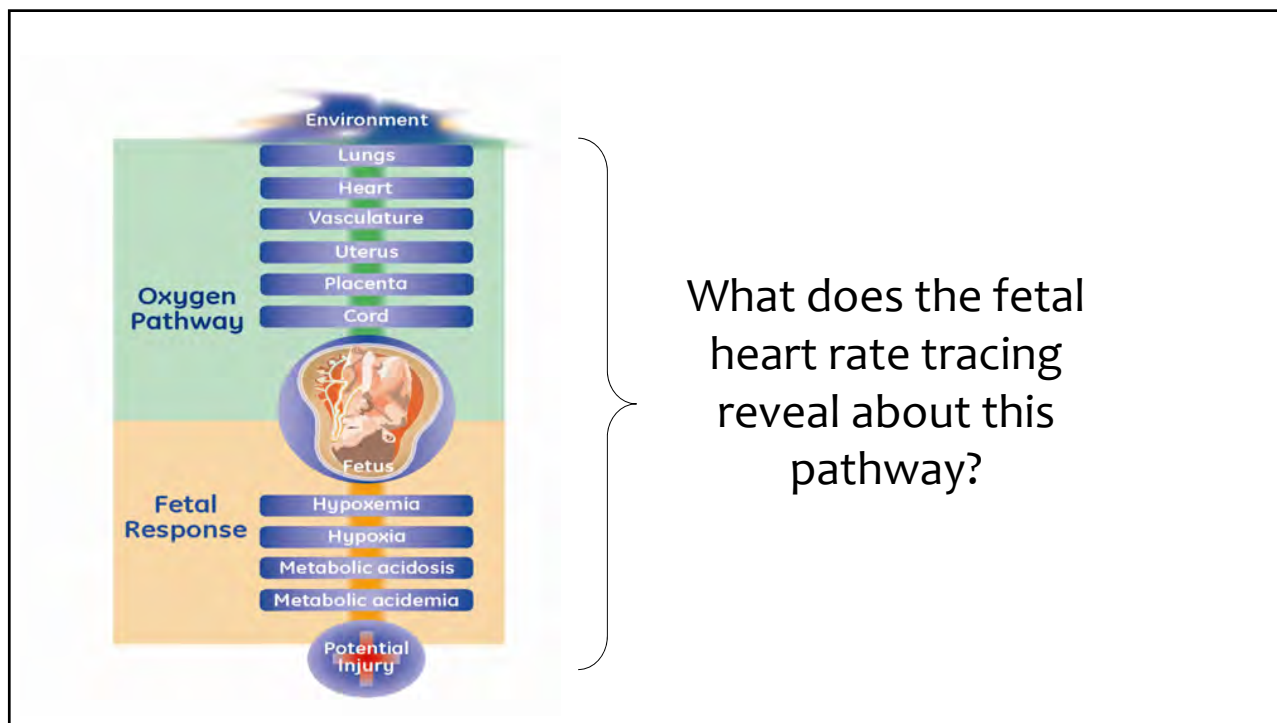
Oxygen Pathway

Fetal oxygenation involves the transfer of oxygen from the environment to the fetus...

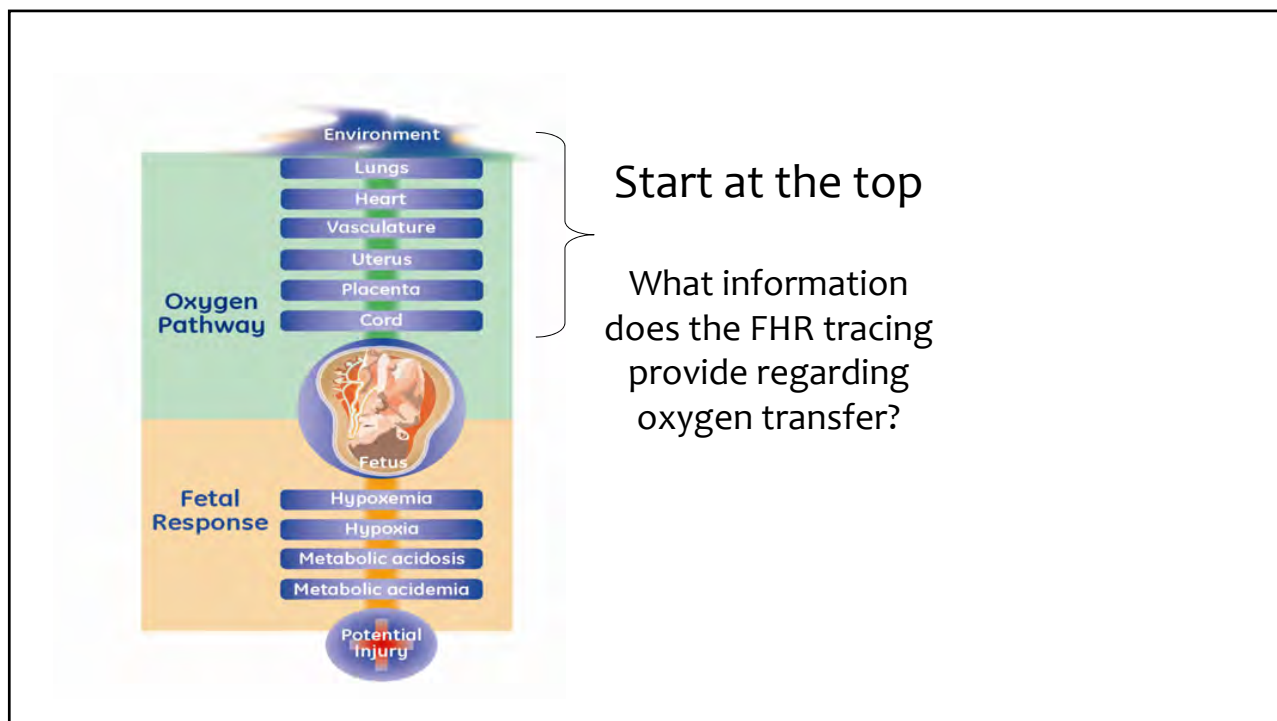
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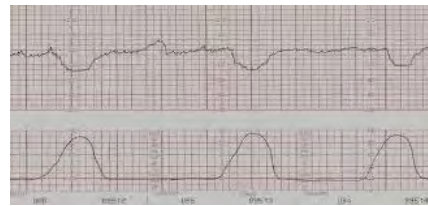
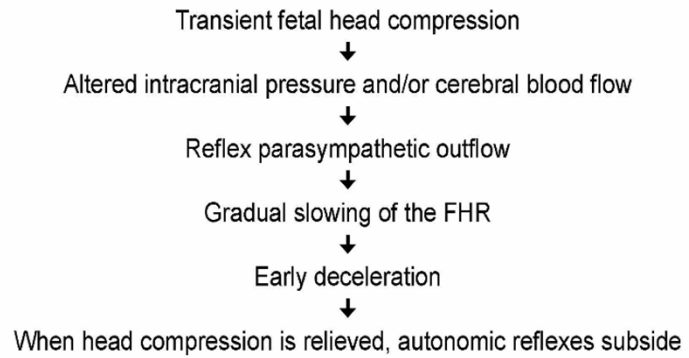
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NOT ALL FHR DECELERATIONS HAVE A RELATIONSHIP TO THE OXYGEN PATHWAY...

- To draw conclusions regarding the significance of *any* FHR deceleration, we must understand the underlying physiology.
- But most of us were taught very simplistic phrases, like “head compression”, “cord compression” or “uteroplacental insufficiency”.
- Let’s see if we can go a bit deeper and perhaps draw some conclusions about FHR decelerations and fetal oxygenation

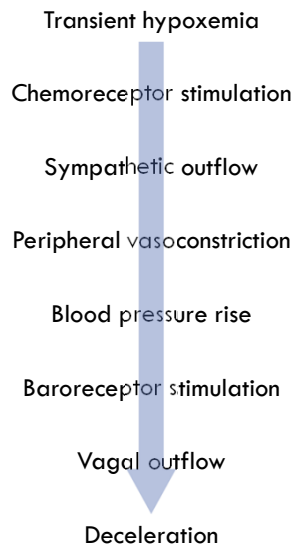
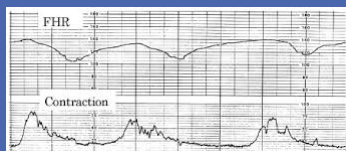
56

PHYSIOLOGY: EARLY DECELERATIONS



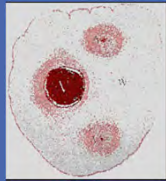
57

MECHANISM OF LATE DECELERATION



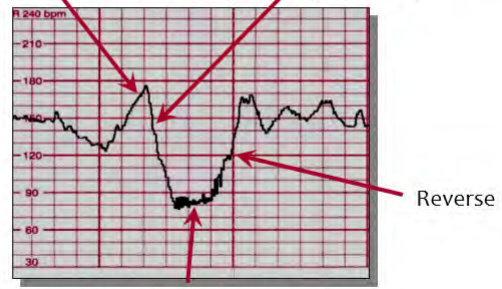
58

MECHANISM OF VARIABLE DECELERATION



VENOUS COMPRESSION
Decreased venous return
Relative hypovolemia
Reflex increase in FHR

ARTERIAL COMPRESSION
Increased SVR, elevated BP
Baroreceptor stimulation
Vagal outflow



Junctional / Idioventricular Rate

59

Make it easy for yourself and your team...



60

The diagram illustrates the oxygen pathway from the environment to the fetus. It is represented as a vertical stack of components: Environment, Lungs, Heart, Vasculature, Uterus, Placenta, and Cord, leading to the Fetus. The pathway is highlighted in green, and the fetus is shown in a circular inset at the bottom.

All FHR decelerations that have any potential clinical significance have **the same common trigger...**

Interruption of oxygen transfer from the environment to the fetus at one or more points along the oxygen pathway

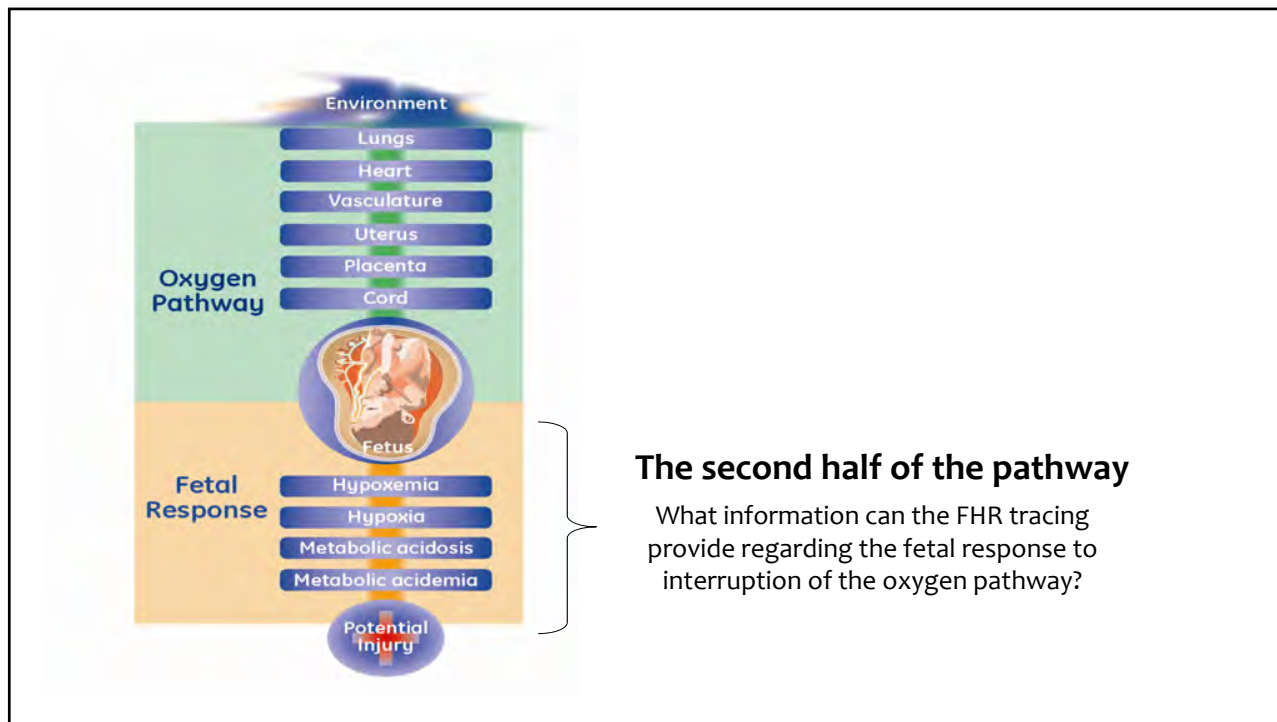
So, when we see a late, variable, or prolonged decel, we can agree ...

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This diagram shows the oxygen pathway and the resulting fetal response. The oxygen pathway (Environment, Lungs, Heart, Vasculature, Uterus, Placenta, Cord) is shown in green. Below it, the fetal response is shown in orange, including Hypoxemia, Hypoxia, Metabolic acidosis, and Metabolic acidemia, leading to Potential Injury. A bracket on the right side of the diagram points to the text 'Principle #1'.

Principle #1
Variable, late or prolonged decelerations signal interruption of the oxygen pathway at one or more points

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Neonatal Encephalopathy AND Neurologic Outcome
SECOND EDITION

The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

American Academy of Pediatrics
PEDIATRIC SPECIALTY SOCIETY OF A.C.O.G.

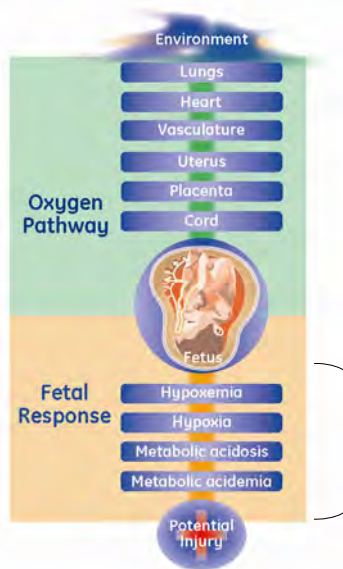
Endorsed/Supported by

- American College of Nurse-Midwives
- American Gynecological and Obstetrical Society
- American Society for Reproductive Medicine
- Association of Women's Health, Obstetric and Neonatal Nurses
- Australian Collaborative Cerebral Palsy Research Group
- Child Neurology Society
- Japan Society of Obstetrics and Gynecology
- March of Dimes Foundation
- Royal Australian and New Zealand College of ObGyn
- Royal College of Obstetricians and Gynaecologists
- Society for Maternal Fetal Medicine
- Society of Obstetricians and Gynaecologists of Canada

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“In a fetus exhibiting either moderate variability or accelerations of the FHR, damaging degrees of hypoxia-induced metabolic acidemia can reliably be excluded”

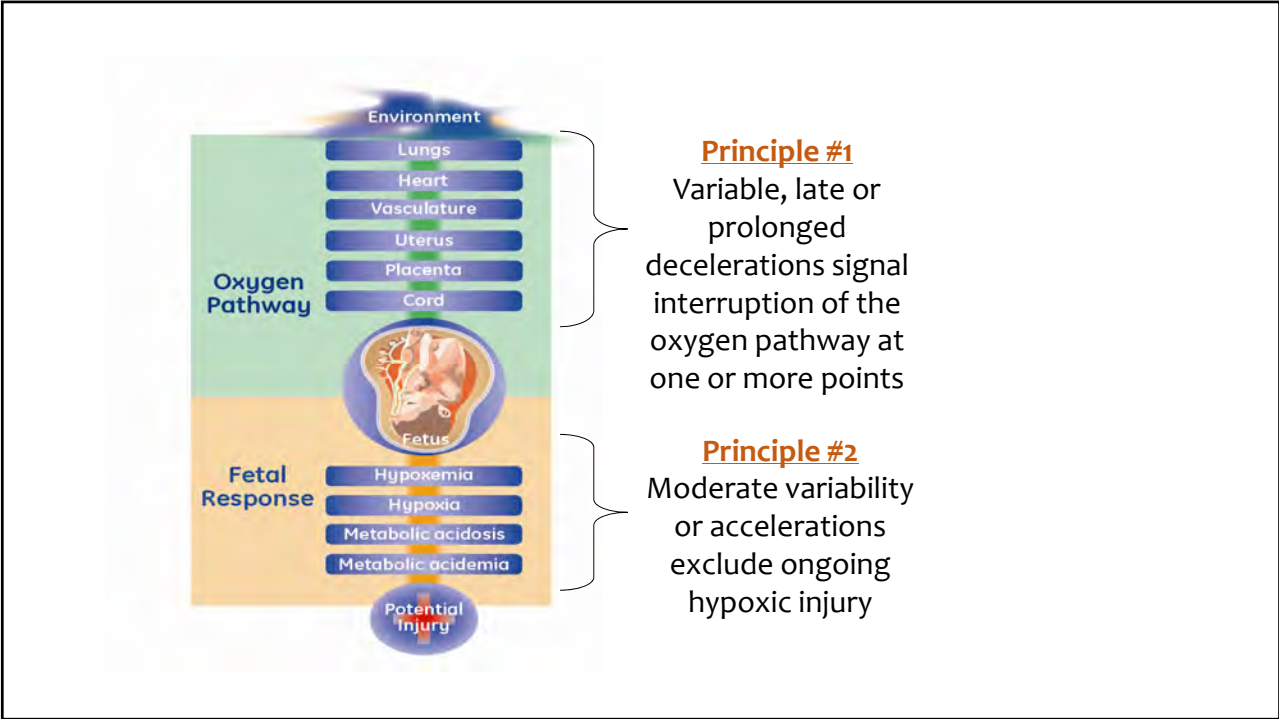
65



Principle #2

Moderate variability or accelerations exclude ongoing hypoxic injury

66



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DOCUMENTATION

Purposes of documentation:

1. Facilitate communication among & between caregivers
2. Promote improved quality of care by encouraging assessment and reevaluation of progress and clinical plans
3. Meet professional and legal standards



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THE THREE “D”S

Disclosure

- A family's story will be affected by disclosure conversations following an unexpected outcome,
- Do not underestimate the impact

Documentation

- **Records will become a sword for the plaintiffs or a shield for the defense**

Deposition

- Closely related to documentation, what is testified to at deposition will be the basis of trial testimony and may impact settlement

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COMMON ALLEGATIONS

Failure to recognize Category II / III FHR and underlying physiology

Lack of current FHM education and competency training

Signal Ambiguity

Failure to follow protocols

Poor documentation

Inadequate EFM tracing

Communication failure at all care levels

Lack of clinical context for current obstetric situation

Lack of situational awareness

Failure to address physician/nursing concerns

Chain of command problems

Adapted from: Esplin, M. S., & Eller, A. G. 10 tips for overcoming common challenges of intrapartum fetal monitoring Use these expert tips to anticipate and address the common challenges of intrapartum FHR monitoring to improve care of the mother and baby and reduce potential liability. Four clinical case scenarios presented. OBG Manag. 2016; 28 (5): 34-46

71

THE OBSTETRIC RECORD

Critical Thinking

Assessment: Encompasses everything

Communication: What I tell others

Documentation: What is recorded

- Must accurately reflect occurrence and sequence of events
- Subject to keen scrutiny by experts



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LEGAL PERSPECTIVE ON DOCUMENTATION



Not documented, not done.



Poorly documented, poorly done



Incorrectly documented, fraudulent

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PRINCIPLES OF EFFECTIVE DOCUMENTATION

Documentation quality

- Permanently accessible, retrievable, and available for audits
- Thorough, accurate, relevant, and consistent
- Clear, concise, timely, and complete
- Legible regardless if paper or electronic format
- Entered contemporaneously and sequentially
- Reflective of nursing process and critical thinking
- Apply standardized EFM nomenclature to entries
- Avoid nonspecific terms such as "reassuring, good"

Staff education and training

- Provide evidence of patient handoffs
- Comprehensive documentation education and training plan for new employees incorporating technical elements of charting with organization or unit documentation policies
- Ongoing follow-up education for all employees to reinforce information and documentation trend updates
- Conduct team training

Documentation and communication policies

- Familiarization with organization and work location documentation and communication policies that include chain of command, consultation and on-call policies, transfer policies, and conflict resolution
- Consider annual review of key policy by bedside clinicians and leadership

Cypher RL. Electronic Fetal Monitoring Documentation: Connecting Points for Quality Care and Communication. *The Journal of perinatal & neonatal nursing*. 2018 Jan 1;32(1):24-33.

74

PRINCIPLES OF EFFECTIVE DOCUMENTATION

Medical record security system	<ul style="list-style-type: none"> • Integrated into documentation systems that abide by recommended industry standards, governmental mandates, accrediting agencies, and organizational policies • To include: <ul style="list-style-type: none"> • Data security • Protection of patient identification • Confidentiality of patient information, clinical professionals' information, and organizational information
Documentation entries	<p>Medical record entries must be:</p> <ul style="list-style-type: none"> • Accurate, valid, and complete • Authenticated demonstrating entries are truthful, the clinician is readily identified, and information has not been added or inserted • Dated and time-stamped by the clinician • Legible/readable • Completed using standardized terminology and abbreviations
Standardized terminology	Standardized terminologies and The Joint Commission–approved abbreviations that are used to describe plan, deliver, and evaluate nursing care based on professional organizational guidelines and position statements

Cypher RL. Electronic Fetal Monitoring Documentation: Connecting Points for Quality Care and Communication. The Journal of perinatal & neonatal nursing. 2018 Jan 1;32(1):24-33.

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KEYS TO SUCCESSFUL DOCUMENTATION



Should be: respectful, professional, objective

Identify clinician by name

Place patient/family statements in quotes

If orders are questioned

• Document clarification was sought and discussed



Do not: place blame, make assumptions, criticize other clinicians

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“CLEAR” DOCUMENTATION

- Contemporaneous
- Logical
- Explicit
- Accurate
- Readable

77



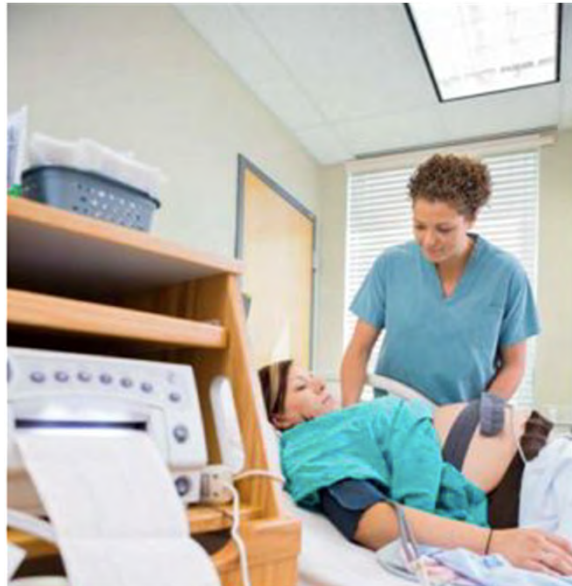
CONTEMPORANEOUS

- Written around or near time of occurrence or intervention
- No legal standard
- Use common sense
- Records must be transparent
- No harm in a proper “late” entry

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ASSESSMENT OF EFM TRACINGS INFERS THAT THERE IS **BEDSIDE** VISUAL REVIEW OF A PAPER TRACING OR LABOR ROOM COMPUTER SCREEN.

DO NOT OPEN YOURSELF UP TO BEING PAINTED AS A NURSE WHO SPENDS MORE TIME OUTSIDE THE ROOM THAN IN IT!!



Cypher RL. Electronic Fetal Monitoring Documentation: Connecting Points for Quality Care and Communication. JPNN. 2018 Jan 1;32(1):24-33.

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THE WAY A SITUATION, ACTION OR EVENT IS PERCEIVED BY THE PUBLIC OR BY A PARTICULAR GROUP OF PEOPLE

“Optics”

80

NURSING INTERRUPTIONS

9 hospitals reviewed 13, 025 interruptions (nursing desk)

- Direct patient care not being performed
- Most interruptions: documentation outside patient's rooms
- 90% of interruption-related errors resulted in
- Delay in treatment, loss of concentration, or loss of focus

4 pediatric units found 5325 interruptions

- 88.9% could have negative consequences

McGillis-Hall LM, Ferguson-Parke M, Peter E, et al. Going blank: factors contributing to interruptions to nurses' work and related outcomes. J Nurs Manag. 2010;18:1040-1047.
McGillis-Hall LM, Pedersen C, Hubley P, et al. Interruptions and pediatric patient safety. J Pediatr Nurs. 2010;25:167-175

81

No nationally recognized legal standard

- Check hospital policy, if none, have your own routine/standard.

"1-2 hours after the fact should be flagged as late entries."

Do not wait until next shift

- Consult risk management for guidance if you are unsure

LATE ENTRY

Miller, LA. Ask the expert: Frequently asked questions on nursing liability issues. JPNN 2014.

82

LATE ENTRY

“When there is a delay in entering chart information, write the phrase late entry at beginning of the note. ...Use the current date and time. Explain the delay in recording the information...”



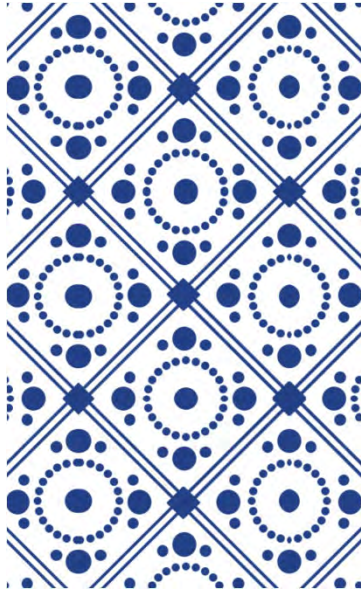
Kennedy, B. & Baird, S.M. (2016). *Intrapartum management modules: A perinatal education program (5th edition)*

83

Late entry due to urgency of patient care situation. At 22:10 patient had increasing pelvic pressure and bloody show. Fetal heart rate baseline 145 bpm, moderate variability, intermittent variable decelerations. Firm contractions every 2-4 minutes lasting 70-90 seconds. Vaginal examination by CNM Zemmer: 6/100%/-1. Approximately 10 minutes later, involuntary pushing noted, followed by a 5-minute prolonged deceleration to 90 beats per minute. Patient turned to right side. Repeat examination by this nurse 10/100%/+4. CNM Zemmer called to room for delivery. Head out at 22:32, followed by shoulder dystocia. Time of birth 22:38.

Cypher RL. Electronic Fetal Monitoring Documentation: Connecting Points for Quality Care and Communication. *The Journal of perinatal & neonatal nursing*. 2018

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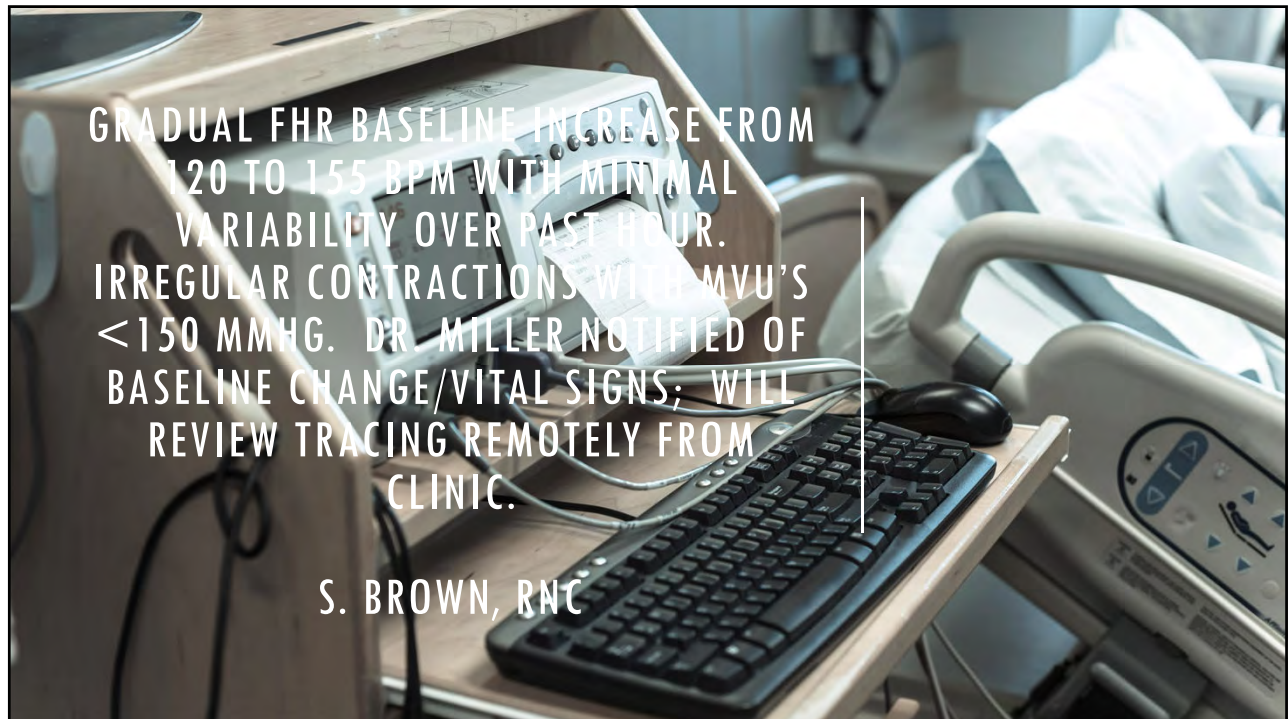


Plain and unambiguous
SOAP notes provide a logical format
Show a clear plan related to patient status
Don't be afraid of narrative notes

LOGICAL

Cypher RL. Electronic Fetal Monitoring Documentation: Connecting Points for Quality Care and Communication. The Journal of perinatal & neonatal nursing. 2018 Jan 1;32(1):24-33.

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GRADUAL FHR BASELINE INCREASE FROM
120 TO 155 BPM WITH MINIMAL
VARIABILITY OVER PAST HOUR.
IRREGULAR CONTRACTIONS WITH MVU'S
<150 MMHG. DR. MILLER NOTIFIED OF
BASELINE CHANGE/VITAL SIGNS; WILL
REVIEW TRACING REMOTELY FROM
CLINIC.

S. BROWN, RNC

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EXPLICIT

Avoid vague or ambiguous terms
Components not categories

Nurse at bedside; fetal heart rate appears sketchy; toco not picking up contractions; patient requests pain medication; midwife Duncan called for orders.

Nurse at bedside; unable to interpret fetal heart rate data due to noncontiguous tracing related to maternal body habitus; firm contractions palpable every 2-3 minutes; monitors readjusted patient requests pain medication; pain scale 7 of 10; midwife Duncan called for pain medication orders and fetal spiral electrode/intrauterine pressure catheter placement.



87

Timing of notes, interventions,
occurrences
Use correct terminology
Notes provide a truthful
representation of what happened
Avoid allegations of spoliation

ACCURATE



88

Improvement in Documentation Using an Electronic Checklist for Shoulder Dystocia Deliveries

Shad H. Deering, MD, Kyle Tobler, MD, and Rebecca Cypher, MSN, PNNP



Deering SH, Tobler K, Cypher R. Improvement in documentation using an electronic checklist for shoulder dystocia deliveries. *Obstetrics & Gynecology*. 2010 Jul 1;116(1):63-6.

Providers present:

Provider Type and Name

Staff _____

Resident _____

Anesthesia _____

Pediatrics _____

Nurse _____

Pediatrics Present at Delivery: Yes/No

Head to Body Interval (seconds): _____

Anterior Shoulder: Left/Right

Sequence of All Maneuvers Used: (drop-down boxes for up to 10 maneuvers)

Gentle traction

McRoberts maneuver

Suprapubic maneuver

Episiotomy

Delivery of posterior arm

Rubins maneuver

Woodscrew maneuver

Gaskins "all-fours" maneuver

Symphysiotomy

Zavenelli

Cord Gases Sent: Yes/No

Neonate Moving Both Arms After Delivery: Yes/No

Evidence of Clavicular Fracture: Yes/No

Brief Narrative of Delivery:

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PERFORM AUDITS

Heightened awareness of MD/CNM/RN documentation

- Full systematic assessment

Ensure policies are consistent with standard of care and up to date

- Reviewed by MD/CNM/RN team
- Reflective of what unit is REALLY doing

Unit's needs

- Frequency of late entries

90

READABLE

Need I explain?

PO
① Pulmonary Long 10×1 stat
② Abnormal MD KID
③ Red Flag to ER
④ New 94% Abnormal/Abnormal
E long into > 75% seen

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NO published peer-reviewed data related to perinatal outcomes and frequency of documentation

Concept of simultaneous assessment and documentation is unreasonable and unattainable (i.e. 2nd stage)

FREQUENCY OF EFM ASSESSMENT AND DOCUMENTATION

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AWHONN POSITION STATEMENT

TABLE 1 ASSESSMENT AND DOCUMENTATION OF FETAL STATUS USING INTERMITTENT AUSCULTATION^{a,b}

	Latent phase (<4 cm)	Latent phase (4-5 cm)	Active phase (≥ 6 cm)	Second stage (passive fetal descent)	Second stage (active pushing)
Low-risk without oxytocin	Insufficient evidence to make a recommendation Frequency at the discretion of the midwife or physician	Every 15-30 minutes	Every 15-30 minutes	Every 15 minutes	Every 5-15 minutes

^aFrequency of assessment should always be determined based on the status of the mother and fetus and at times will need to occur more often based on their clinical needs, e.g., in response to a temporary or on-going change.

^bSummary documentation is acceptable, and individual hospital policy should be followed.

Fetal Heart Monitoring: Journal of Obstetric, Gynecologic & Neonatal Nursing, Volume 47, Issue 6, 874 - 877

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TABLE 2 ASSESSMENT OF FETAL STATUS USING ELECTRONIC FETAL MONITORING^{a,b}

	Latent phase (<4 cm)	Latent phase (4-5 cm)	Active phase (≥ 6 cm)	Second stage (passive fetal descent)	Second stage (active pushing)
Low-risk without oxytocin	Insufficient evidence to make a recommendation Frequency at the discretion of the midwife or physician	Every 30 minutes	Every 30 minutes	Every 30 minutes	Every 15 minutes
With oxytocin or risk factors	Every 15 minutes with oxytocin; every 30 minutes without	Every 15 minutes	Every 15 minutes	Every 15 minutes	Every 5 minutes

^aFrequency of assessment should always be determined based on the status of the mother and fetus and at times will need to occur more often based on their clinical needs, e.g., in response to a temporary or on-going change.

^bSummary documentation is acceptable, and individual hospital policy should be followed.

Fetal Heart Monitoring: Journal of Obstetric, Gynecologic & Neonatal Nursing, Volume 47, Issue 6, 874 - 877

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SUMMARY DOCUMENTATION

Summary documentation can occur at less frequent intervals than assessment parameters.

Depending on risk status and other maternal-fetal conditions, a summary note could presumably be charted every 30, 45, or 60 minutes.

Cypher RL. Electronic Fetal Monitoring Documentation: Connecting Points for Quality Care and Communication. JPNN 2018.

95

Documentation does not necessarily need to occur at the same intervals as assessment when using continuous EFM because FHM data are recorded in the tracing. For example, while evaluation of the FHR may occur every 15 minutes with EFM, a summary of findings of fetal status may be documented in the medical record less frequently. However, it is important that the documentation reflect the frequency of assessment and the interpretation of FHM findings.

Fetal Heart Monitoring: Journal of Obstetric, Gynecologic & Neonatal Nursing . 2019; 47 (6) , 874 - 877

AWHONN 2019

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**ACOG
REAFFIRMED
2015**

When EFM is used during labor, the nurses or physicians should review it frequently. In a patient without complications, the FHR tracing should be reviewed approximately every 30 minutes in the first stage of labor and every 15 minutes during the second stage. The corresponding frequency for patients with complications (eg, fetal growth restriction, preeclampsia) is approximately every 15 minutes in the first stage of labor and every 5 minutes during the second stage. Health care providers should periodically document that they have reviewed the tracing.

American College of Obstetricians and Gynecologists. Intrapartum fetal heart rate monitoring: nomenclature, interpretation, and general management principles; ACOG practice bulletin no. 106. *Obstet Gynecol.* 2009;114(1):192-202.