

Intrapartum Management of Category II Fetal Heart Rate Tracings



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OBJECTIVE

To have every fetus that presents with, or develops a Category II tracing, deliver in the same state of health as when the fetal monitoring was commenced.

In other words, no fetus that presents with a Category I tracing should ever deliver with brain damage in the absence of an unpredictable catastrophic sentinel event, and no fetus that presents with evidence of prior potential brain damage should be further damaged by being in labor.

The 2008 National Institute of Child Health and Human Development Workshop Report on Electronic Fetal Monitoring

Update on Definitions, Interpretation, and Research Guidelines

George A. Macon, MD, Gary D. V. Hankins, MD, Catherine Y. Spong, MD, John Heath, MD, and Thomas Moore, MD

Obstet Gynecol 2008;112:661-6



CLINICAL MANAGEMENT GUIDELINES FOR OBSTETRICIAN-GYNECOLOGISTS

NUMBER 106, JULY 2008

Replaces Practice Bulletin Number 70, December 2003

Intrapartum Fetal Heart Rate Monitoring: Nomenclature, Interpretation, and General Management Principles

Category I - Normal

The FHR tracing shows ALL of the following:

- Baseline rate 110-160 bpm
- Moderate FHR variability
- Lack of late or variable decelerations
- Accelerations present or absent
- Early decelerations present or absent

Strongly predictive of normal acid-base status at the time of observation

Rx: Routine care

Category III - Abnormal

The FHR tracing shows EITHER of the following:

Absent variability with recurrent late decelerations, variable decelerations or bradycardia
OR
Sinusoidal pattern

Predictive of abnormal fetal acid-base status at the time of observation

Rx: Requires prompt evaluation and interventions

Category II - Indeterminate

All FHR tracings not categorized as Category I or III

Examples:

- Bradycardia without absent baseline variability
- Tachycardia
- Minimal or marked baseline variability
- Absent baseline variability without recurrent decelerations
- Absent decelerations after fetal stimulation
- Prolonged decelerations >2minutes but <10 minutes
- Recurrent late or variable decelerations with moderate variability
- Variable decelerations with slow return to baseline, overshoots, or shoulders

THE AMERICAN COLLEGE OF OBSTETRICIANS AND GYNECOLOGISTS
WOMEN'S HEALTH CARE PHYSICIANS

PRACTICE BULLETIN

CLINICAL MANAGEMENT GUIDELINES FOR OBSTETRICIANS-GYNECOLOGISTS

Volume 14, Number 1, January 2013

Management of Intrapartum Fetal Heart Rate Tracings

Category II FHR tracings include all FHR tracings that are not classified as Category I or III. Category II tracings require evaluation, continued surveillance, initiation of appropriate corrective measures when indicated, and reevaluation. Once identified, these tracings may require more frequent evaluation, documentation, and continued surveillance, unless they revert to Category I. Given the diverse spectrum of abnormal FHR patterns in Category II the presence of FHR accelerations or moderate FHR variability or both are highly predictive of normal fetal acid-base status and, thus, may help guide clinical management.

Category II

Category II tracings are not predictive of abnormal fetal acid-base status

There is not enough evidence to place these tracings into either Category I or III

This category represents a wide spectrum of potential fetal compromise and requires continued surveillance and reevaluation

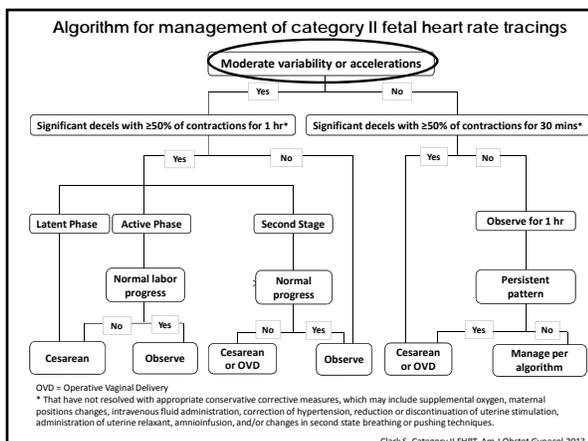
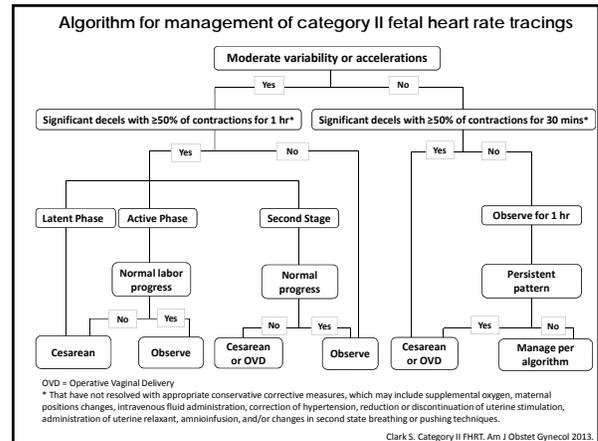
Every category II tracing should be interpreted in the context of the entire clinical picture

OBSTETRICS

Intrapartum management of category II fetal heart rate tracings: towards standardization of care

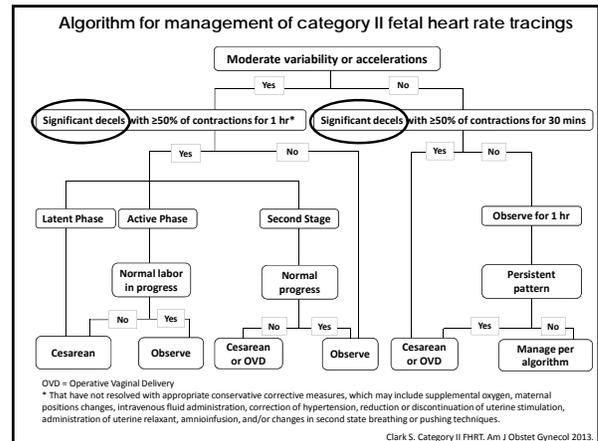
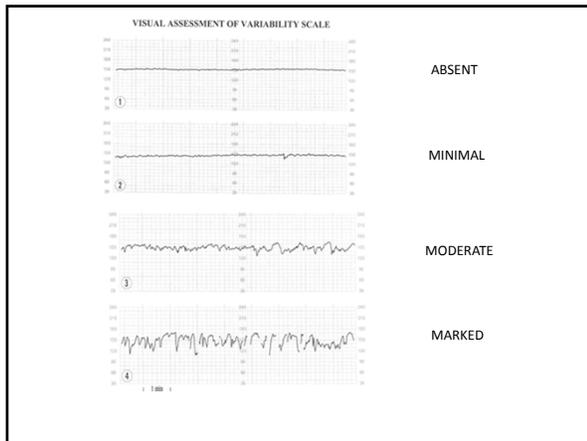
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Am J Obstet Gynecol. 2013 Aug; 209:89-97



Clarifications for Use In Algorithm

- Variability refers to the predominant baseline FHR pattern (marked, moderate, minimal, absent) during a 30 minute evaluation period, as defined by the NICHD document.
- Marked variability is considered to be the same as moderate variability for the purposes of this algorithm, and minimal variability is considered to be the same as absent variability.



Clarifications for Use In Algorithm

3. Definition of significant decelerations:

- Variable decelerations >60 seconds with a nadir >60 bpm below the baseline.
- Variable decelerations >60 seconds with a nadir <60 bpm regardless of the baseline.
- Any late decelerations of any depth
- Any prolonged deceleration, as defined by the NICHD.

Identification of a prolonged deceleration should prompt discontinuation of the algorithm until it is resolved.

Clarifications for Use In Algorithm

4. Application of the algorithm may be initially delayed for up to 30 minutes while attempts are made to alleviate the category II pattern with conservative therapeutic interventions e.g. correction of hypotension, position change, amnioinfusion, tocolysis, reduction or discontinuation of oxytocin

Clarifications for Use In Algorithm

- Once a category II FHR pattern is identified the tracing should be re-evaluated and algorithm applied every 30 minutes.
- Any significant change in the tracing should result in reapplication of the algorithm.
- If the tracing reverts to category I, or deteriorates for even a short time to category III status the algorithm no longer applies. If, however, a category I reverts to category II the algorithm should be reinstated.

Clarifications for Use In Algorithm

- If the algorithm suggests that delivery is indicated, this should be instituted within 30 minutes of that decision having been made.
- The algorithm may be overridden at any time if, after evaluation of the patient, her physician believes it is in the best interest of the fetus to intervene sooner.

Clarifications for Use In Algorithm

10. THE ALGORITHM DOES NOT APPLY TO FETUSES WITH EXTREME PREMATURITY.

In these fetuses the significance of FHR patterns of concern in more mature fetuses (eg, minimal variability) or the ability to tolerate intrapartum events leading to some types of category II patterns is not well defined.

ADDITIONAL COMMENTS

This algorithm is an initial step in the development of management recommendations for category II FHR patterns. Its effectiveness and associated intervention rates must be studied, and as a consequence the algorithm may need adjustment in the future.

ADDITIONAL COMMENTS

The challenge in managing category II tracings is to deliver fetuses who are at risk for, but have not yet developed damaging degrees of hypoxia/acidemia without engaging in unnecessary interventions.

The algorithm strives for the latter (unnecessary interventions) but has a primary focus on the former (eliminating damaging acidemia).

ADDITIONAL COMMENTS

The documentation of the effectiveness of the various conservative attempts to relieve FHR abnormalities varies widely (i.e. amnioinfusion vs. administration of oxygen).

Any or all of the currently accepted modalities may be tried, but their effect should be apparent within 30 minutes.

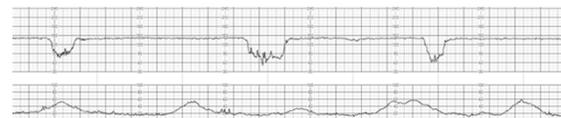
Oxytocin infusion should be reduced or discontinued in the presence of excessive uterine activity and a persistent category II pattern.

ADDITIONAL COMMENTS

Although there is no single fetal arterial pH value that defines a point of hypoxia-induced damage applicable to all fetuses, it has been shown that baseline variability and accelerations will reliably be depressed before the pH has reached a level of acidemia associated with neurologic injury for that fetus.

However, variability within decelerations alone cannot be reliably used to exclude fetal acidemia.

ATYPICAL VARIABLE DECELERATIONS WITH MINIMAL/NEAR ABSENT BASELINE VARIABILITY



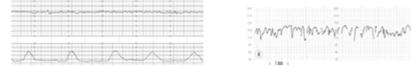
ADDITIONAL COMMENTS

FHR patterns cannot be interpreted in isolation so the algorithm incorporates progress in labor.

The same category II pattern may have a different indicated management when presenting in early first-stage labor than that presenting in the late second stage.

ADDITIONAL COMMENTS

Some potentially worrisome features of category II tracings are not included in the algorithm based decision tree for intervention – e.g. fetal tachycardia or marked variability.



It is expected that other concerning patterns which are included in the algorithm will appear prior to the need for intervention based on those features alone.

ADDITIONAL COMMENTS

The algorithm is intended to address the issue of progressive intrapartum hypoxia/acidemia due to the effects of contractions during labor on a susceptible fetus.

This algorithm will not predict or prevent unexpected sentinel events that can rapidly convert a FHR pattern from category II to category III.

ADDITIONAL COMMENTS

However, there are 2 clinical scenarios where category II tracings may be harbingers of sentinel events.

1. Vaginal bleeding or clinical signs sufficient enough to suggest a possible abruption.
2. Women undergoing TOLAC.

In both cases the algorithm doesn't apply as expeditious C/S is often indicated based on the sudden appearance of decelerations in a context that would otherwise be reassuring.

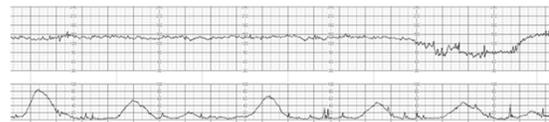
ADDITIONAL COMMENTS

Prolonged decelerations are not addressed in the algorithm because the definition is too broad to be useful in isolation.

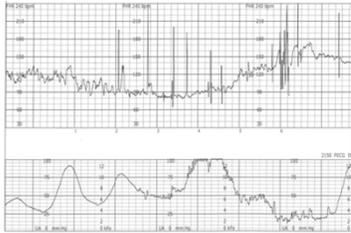
Example: The management strategy is completely different for a prolonged deceleration following an epidural than for the same pattern in a woman undergoing a TOLAC.

However, tolerance for such recurrent patterns remote from delivery ought to be small unless the etiology is apparent and can be promptly ameliorated.

A PROLONGED DECELERATION



A PROLONGED DECELERATION WITH TACHYSYSTOLE

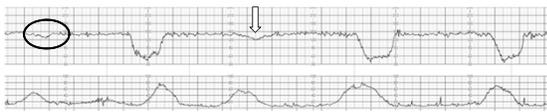


ADDITIONAL COMMENTS

Different types of decelerations have different etiologies, and a given fetus may have more than one pathologic process occurring simultaneously.

Example: An IUGR fetus may have oligohydramnios resulting in dramatic variables caused by cord compression and subtle late decelerations caused by UPI. In that case the focus should be on the late decelerations.

IUGR FETUS WITH OLIGOHYDRAMNIOS



ADDITIONAL COMMENTS

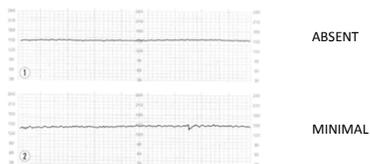
The algorithm authorizes the choice of either cesarean section or operative vaginal delivery in women who are in the second stage of labor.

This choice should be determined by the clinical judgment and level of expertise of the physician in charge of the case.

Remember that the vast majority of category II cases in which delivery is indicated should be delivered within 30 minutes of the decision.

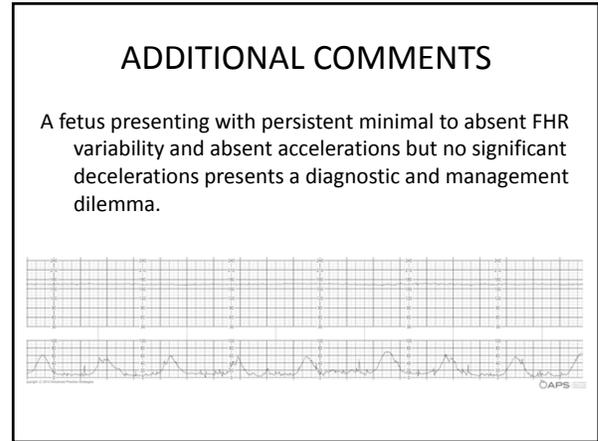
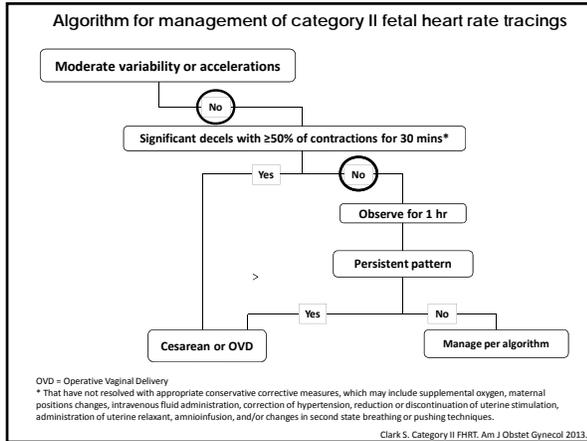
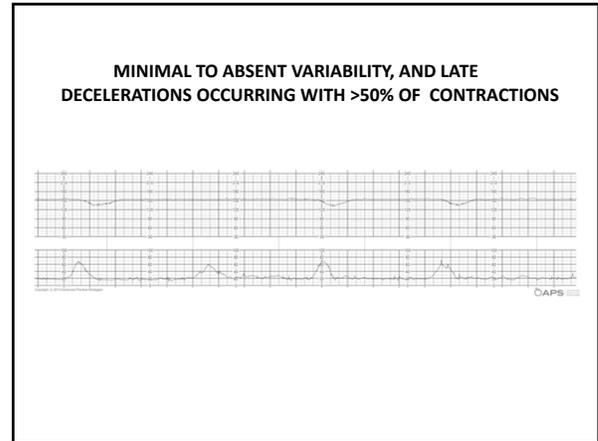
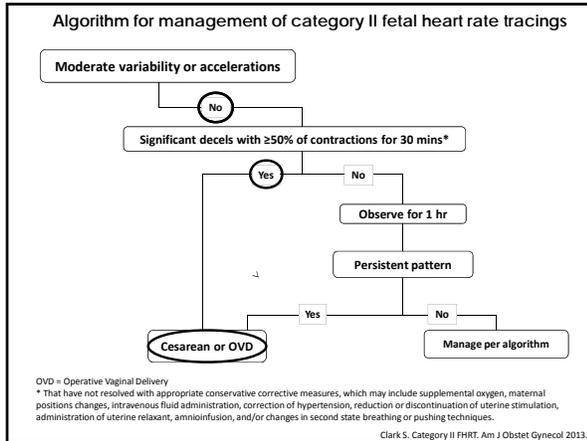
ADDITIONAL COMMENTS

The algorithm treats absent and minimal variability as being equivalent despite the literature supporting the fact that only the former reliably reflects a high degree of correlation with severe fetal acidemia.



ADDITIONAL COMMENTS

- a. Fetuses going from minimal to severe acidemia must first pass through a stage of minimal variability.
- b. Some external monitors may produce artifact that looks like minimal variability. If possible use a FSE.
- c. In some atypical variable decelerations it may be difficult to distinguish the return of the deceleration from the actual baseline itself i.e. the variability may be part of a recovering deceleration.

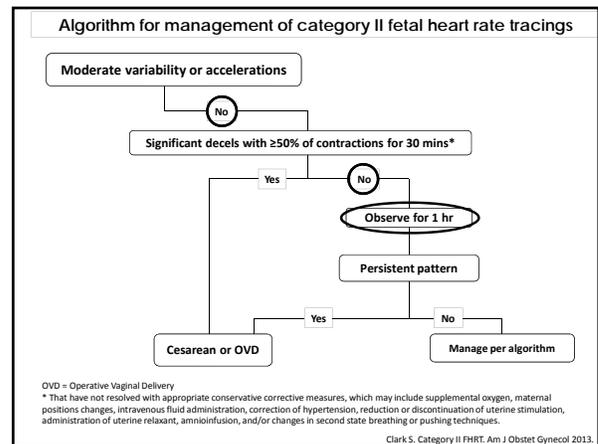


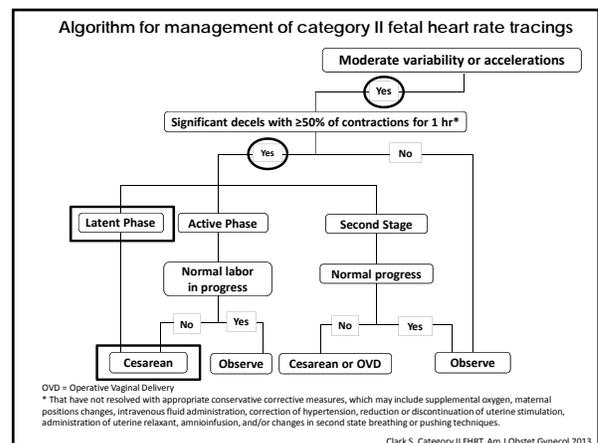
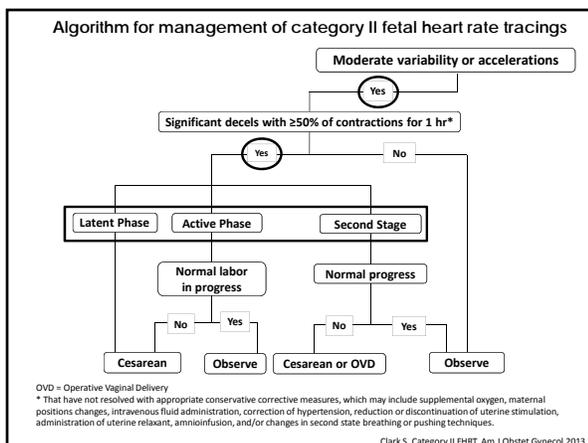
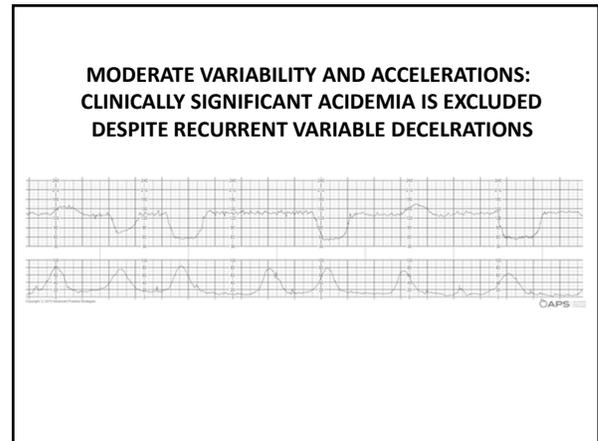
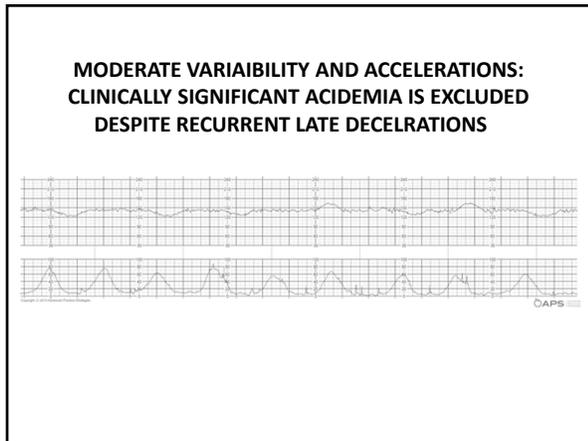
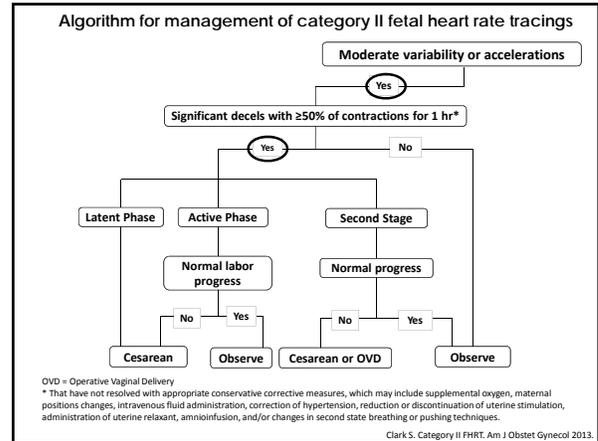
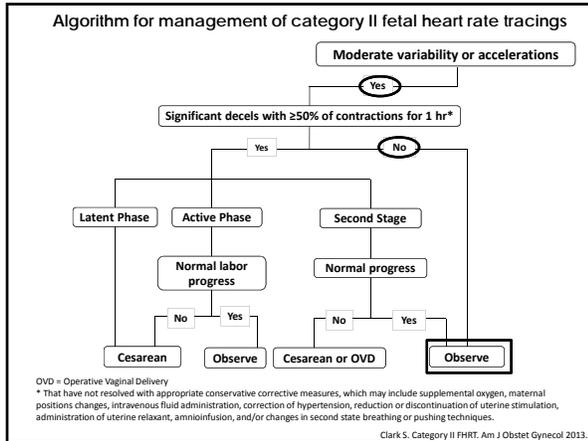
ADDITIONAL COMMENTS

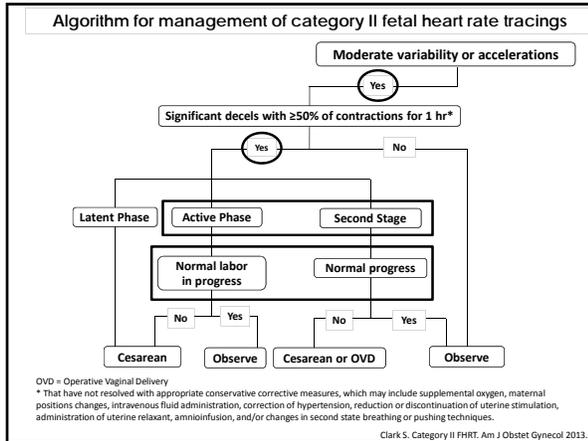
In some cases this represents pre-existing CNS injury with marked metabolic acidemia. In others the intrauterine events leading to the injury may have resolved and the fetus may have recovered metabolically but not neurologically.

These fetuses may be less likely to tolerate the additional hypoxia and acidemia that accompanies even normal labor.

In the absence of significant decelerations, however, it is fair to say that while the fetus may be damaged, it is not being damaged.







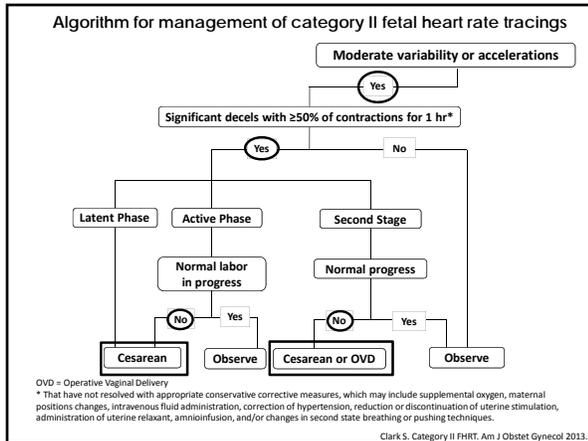
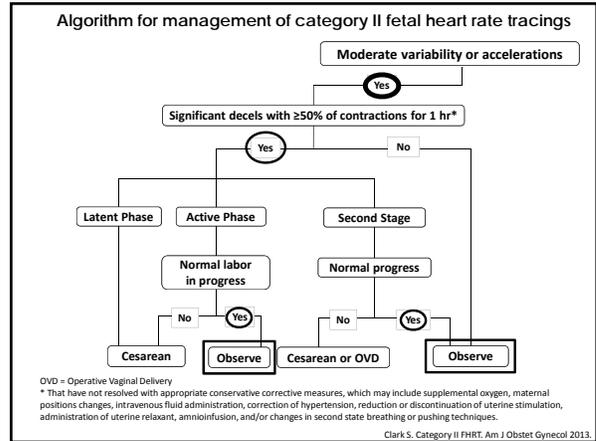
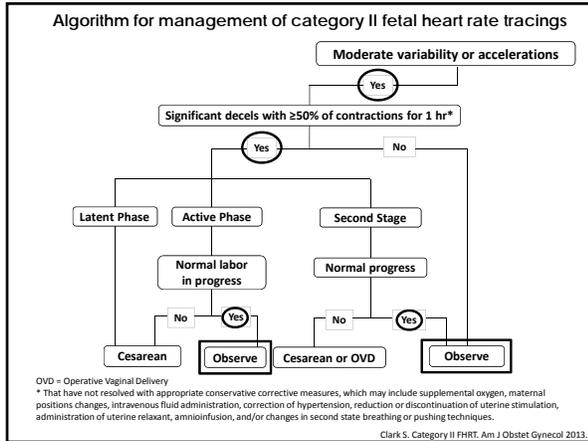
What Constitutes “Normal Progress”?

	Mean	5 th Percentile
Nulliparas		
Rate of cervical dilatation	3 cm/hr	1.2 cm/hr
Duration of 2 nd stage	33 min	117 min
Multiparas		
Rate of cervical dilatation	5.7 cm/hr	1.5 cm/hr
Duration of 2 nd stage	8.5 min	46.5 min

E. Friedman: Progression of spontaneous labor at term: 1978

Suggested definition of “Normal Progress”

Nulliparas	Active phase: 1 cm/hr	Second stage: 2 hours
Multiparas	Active phase: 1.5 cm/hr	Second stage: 1 hour



ADDITIONAL COMMENTS

This algorithm represents a consensus of the best thoughts of the 18 authors of the manuscript. It is supported by available clinical experience, a substantial body of basic science evidence, and indirect clinical data.

There certainly may be other equally acceptable approaches.

ADDITIONAL COMMENTS

In any human endeavor that relies on the performance of multiple team members in an effort to achieve an optimal result standardization will yield improved results.

Adherence to this, or any other evidence-based protocol, reflects practice that is within the standard of care for that institution.

Free Downloadable App



<http://cat2.perigen.com/cat2/>

OBJECTIVE

To have every fetus that presents with, or develops a Category II tracing, deliver in the same state of health as when the fetal monitoring was commenced.

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AN ACHIEVABLE OBJECTIVE

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