Champlain Maternal Newborn Regional Program
Programme régional des soins à la mère et au nouveau-né de Champlain

Perinatal Services BC
An agency of the Provincial Health Services Authority

Fetal Health Surveillance Instructor Update

Work of the National Fetal Health Surveillance Steering Committee

The National Fetal Health Surveillance Steering Committee (N FHS SC) has had a busy and productive year. We have just completed our second year as a formal committee and continue to meet regularly. The committee struck three cross Canada, multidisciplinary work groups and engaged with Salus Global Inc. on a fourth work/advisory group.

Work Groups

The Fetal Health Surveillance Fundamentals 8-hour Workshop Revisions Work Group

The current Fundamentals of Fetal Health Surveillance (FHS) 8 hour workshop is aimed at new and novice perinatal care providers. In its current format across the country it is largely didactic, and this is often reflected in participant evaluations of the program. Furthermore, participants who are new to FHS often find this program to be challenging; the current formatting with didactic and quizzes throughout the day limits the learners time available to grasp a better understanding of the concepts and ambiguities of FHS. This work group has been tasked with redesigning how we teach FHS to novice learners in Canada. Currently, they are working diligently to review how FHS is being taught and have revised the program objectives for both on-line in-class learning. They are examining ways to enhance the on-line learning opportunities and the in-class work, to capitalize on adult learning principles.

FHS Refresher Course Work Group

Variability exists in the types of FHS refresher courses being provided in Canada. Some Canadian perinatal care providers (e.g. midwives, registered nurses) are expected to complete a FHS course every 2-3 years to meet continuing education requirements. In February 2016, a work group was created to develop a standardized FHS refresher course for current Canadian FHS instructors and care providers. The course will be include: 1) Review of the self-learning FHS manual, 2) completion of online case studies, 3) completion of an online examination, and 4) attendance at a 1.5-2 hours in person workshop. It is anticipated that the FHS refresher course will be available in 2018.

Case Studies National Bank Work Group

The FHS Case Study Work Group was initiated following acknowledgement by the N FHS SC of the absence of a library of FHS case studies. Discussions involving case studies is a crucial component of health care provider education thereby necessitating the availability of case studies for FHS instructors. The goal of the workgroup is to establish a national library with case studies containing a range of scenarios and outcomes that are inclusive of EFM and IA. Integral to the library is the development of a standardized template by which all case studies will be presented.

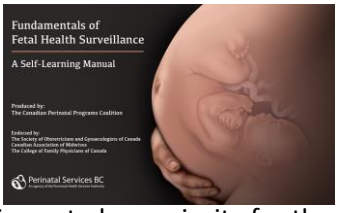
Salus Global Corp - Advisory Group

A small advisory group of the N FHS SC has been brainstorming with Salus Global Corp (MoreOB) to work on an exciting interactive FHS education tool. While still in the very early stages of development, this tool will be accessible to all FHS Instructors throughout the country and will be available to interprofessional staff registered in MoreOB programming within their facility.

SOGC Fetal Health Surveillance: Antepartum and Intrapartum Consensus Guidelines

The SOGC has embarked on a mission to revise the 2007 Fetal Health Surveillance: Antepartum and Intrapartum Consensus Guidelines. Several members from the National FHS Steering Committee have been invited to be part of the revision.

Fundamentals of FHS Self-Learning Manual



Translation of the Fundamentals of FHS Self-Learning Manual

Translation of the Fundamentals of FHS Self-Learning Manual continues to be a priority for the N FHS SC. With the upcoming revision of the SOGC FHS guidelines, the FHS Self-Learning Manual will be revised and a decision has been made to wait for the publication of the new version of the manual before applying for funding to translate the manual.

Access to the online Fundamentals of FHS Self-Learning Manual Changed <u>JUNE 1st!!</u>

The Canadian Fundamentals of Fetal Health Surveillance online manual will be moving from the Centre of Excellence in Simulation Education and Innovation (CESEI) to the University of British Columbia Continuing Professional Development (UBC CPD).

With the move, you will notice some positive changes to the online manual, including:

- self-registration through the UBC CPD site CLICK HERE
- a user-friendly learning management system compatible with all electronic devices;
- easier navigation though the lessons; and
- online chapter quizzes each with a minimum passing grade of 80%!

The course is also undergoing accreditation review for MOC-Section 1 and Mainpro+ certification. It is anticipated that physicians will soon be able to claim credits for time spent during this self-learning activity.

If you log in to your old CESEI account, you will be directed to UBC CPD. All CESEI accounts will be decommissioned. You must self-register for the course through the link provided above and create a new account on the UBC CPD eLearning site in order to access the material.

The manual continues to be free to all Canadian care providers who are participating in fetal health surveillance. For more information, please contact cpd.online@ubc.ca

In the Literature

Nelson, K. B., Sartwelle, T. P., & Rouse, D. (2016, December 1). **Electronic fetal monitoring, cerebral palsy and cesarean section: assumptions versus evidence.** BMJ.

Martis, R., Emilia, O., Nurdiati, D. S., & Brown, J. (2017).**Intermittent auscultation (IA) of fetal heart rate in labour for fetal well-being.** Cochrane Database of Systematic Reviews.

Alfirevic, Z., Devance, D., Gyte, G. M. L., & Cuthbert, A. (2017). **Continuous cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour.** Cochrane Database of Systematic Reviews.

Devan, D., Lalor, J. G., Daly, S., McGuire, W., Cuthbert, A., & Smith, V. (2017). **Cardiotocography versus intermittent auscultation of fetal heart on admission to labour ward for assessment of fetal wellbeing.** Cochrane Database of Systematic Reviews.

Is that a Late or a Variable Deceleration?

Defining Decelerations

Decelerations in the fetal heart rate (FHR) are categorized as early, late or variable and are quantitated by depth in beats per minute (bpm) below the baseline and duration in minutes and seconds. Decelerations are either gradual or abrupt.

Gradual Decelerations (Early & Late Decelerations)

A gradual deceleration reaches its nadir (lowest point) in 30 seconds or more. Gradual decelerations include early and late decelerations.

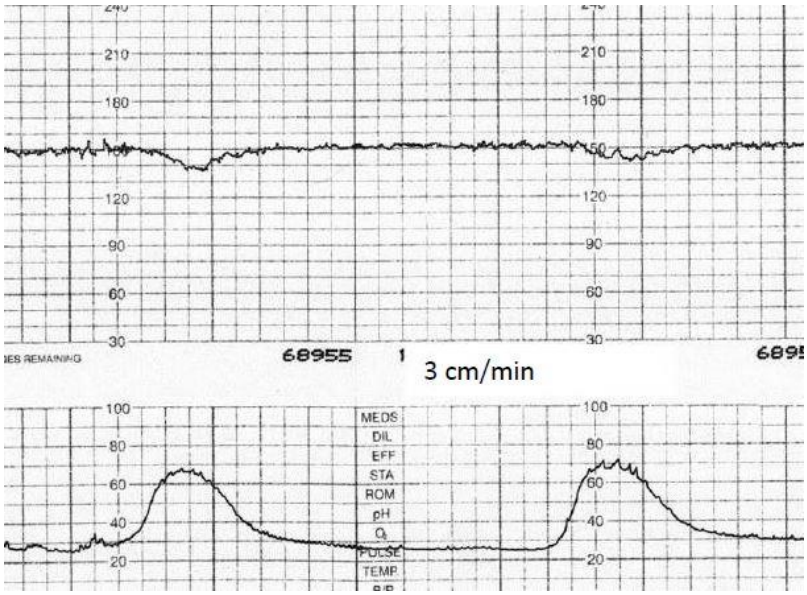
Early Decelerations

Early decelerations occur when the fetal heart rate (FHR) begins to drop at the same time the contraction starts and the FHR recovers before the contraction is finished or as it finishes.

- Gradual (onset to nadir ≥ 30 sec) decrease in FHR during a uterine contraction
- Onset, nadir and recovery of the deceleration occur at the same time as the beginning, peak and end of the contraction

Early decelerations are a fetal response to head compression. They are considered to be benign and are not associated with fetal acidemia.

EARLY DECELERATIONS



Note that the deceleration is gradual (takes 30 seconds or more for them to reach the nadir) and the FHR recovers to the baseline rate before the contraction is finished.

LATE DECELERATIONS

Late decelerations occur when the FHR begins to drop after the beginning of the contraction and the nadir of the deceleration occurs after the peak of the contraction, and the FHR recovers after the contraction has finished.

- Gradual (onset to nadir ≥ 30 sec) decrease in FHR during a uterine contraction
- Onset, nadir and recovery of the deceleration occur <u>after</u> the beginning, peak and end of the contraction

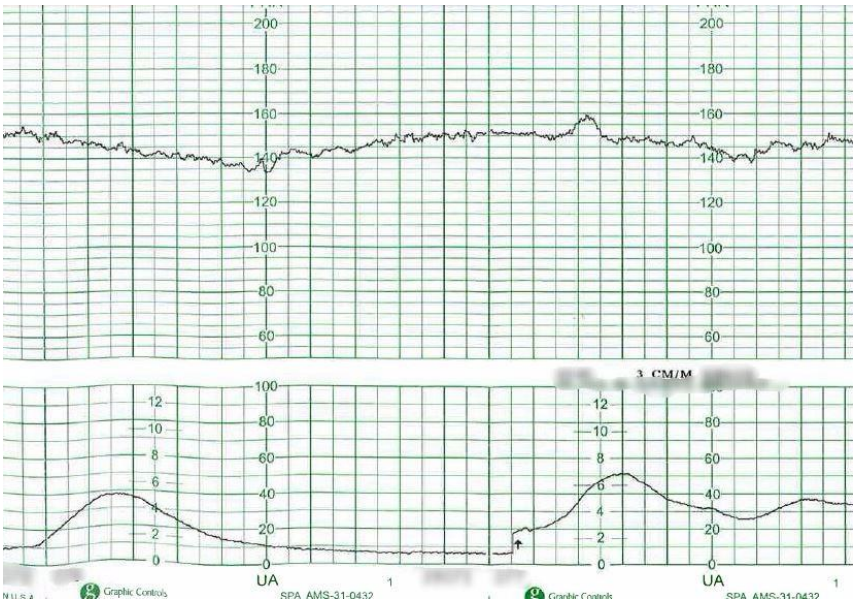
Late decelerations are associated with uteroplacental insufficiency and indicate some degree of fetal hypoxia.

When there is a decrease in oxygen available to the fetus, chemoreceptors are activated, which causes shunting of oxygenated blood to the fetus' vital organs, this in turn, results in fetal hypertension, which activates baroreceptors stimulating the vagus nerve resulting in a gradual slowing of the fetal heart rate. When the contraction ends and more oxygen is available to the fetus, the heart rate gradually returns to the baseline.

It is important to note that late decelerations can occur in the context of moderate variability. The first sign of uteroplacental hypoxia is the occurrence of late decelerations, followed by acidemia, followed by diminishing variability. The identification of late decelerations while FHR variability is moderate, provides a window of opportunity to maximize fetal oxygenation prior to the fetus becoming significantly hypoxic and acidotic.

The electronic fetal monitoring (EFM) tracing is classified as atypical if late decelerations occur occasionally or abnormal when they occur with 50% or more of the contractions.

LATE DECELERATIONS



Late decelerations (gradual decelerations that take 30 seconds or more to reach the nadir) begin after the beginning of the contraction and recover after the completion of the contraction. This tracing shows late decelerations with moderate variability.

This tracing shows late decelerations with absent variability; implying potential myocardial failure and decreased cerebral oxygenation.

Abrupt Decelerations (Variable Decelerations)

An abrupt deceleration reaches its nadir (lowest point) in less than 30 seconds. Abrupt decelerations include variable decelerations.

Variable Decelerations

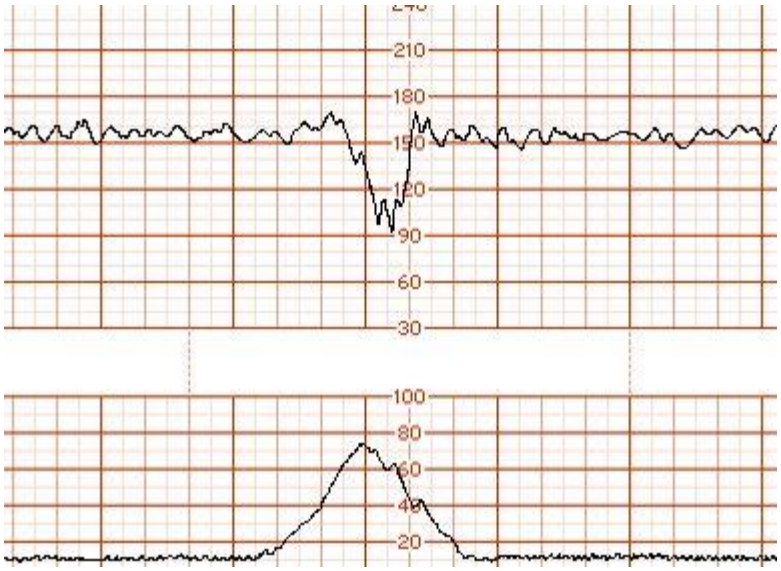
- Abrupt decrease (onset to nadir < 30 sec) in the FHR below the baseline.
- The decrease is at least 15 bpm below the baseline.
- The deceleration lasts at least 15 seconds but less than 2 minutes.
- These types of decelerations may occur with (periodic) or without (episodic) uterine contractions.

Variable decelerations are thought to be a response to cord compression in labour.
Abrupt changes are generally the result of a baroreceptor effect. If the deceleration occurs with a contraction and recovers by the end of the it; the deceleration is almost certainly an uncomplicated variable resulting from a baroreceptor mediated response. If there are other features (such as those defined as making variables complicated) these decelerations have some other autonomic causation (usually chemoreceptor). Therefore if a variable does not recover by the end of the contraction it is a complicated variable.

UNCOMPLICATED VARIABLE DECELERATIONS

Often have “shoulders” as demonstrated by an initial acceleration followed by a rapid deceleration to the nadir, a rapid return to the baseline and a secondary acceleration.

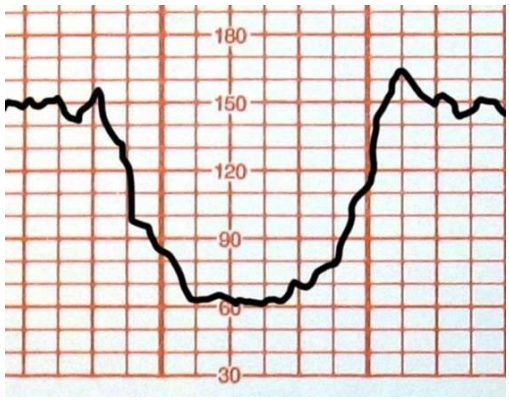
Uncomplicated variable decelerations are not consistently associated with a poor neonatal outcome.



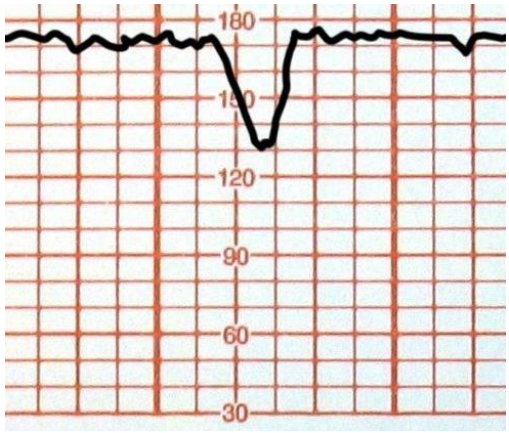
COMPLICATED VARIABLE DECELERATIONS

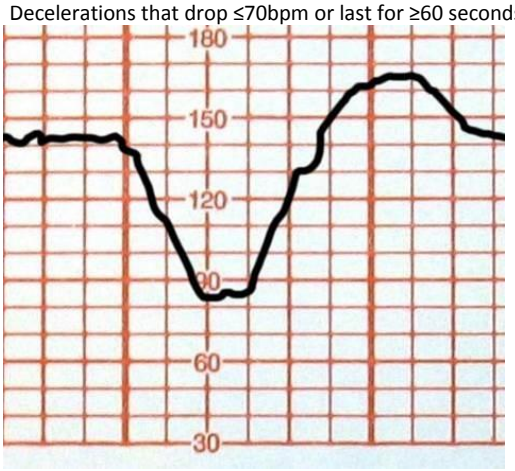
Complicated variable decelerations may be indicative of fetal hypoxia.

Decelerations occurring in the context of baseline bradycardia.

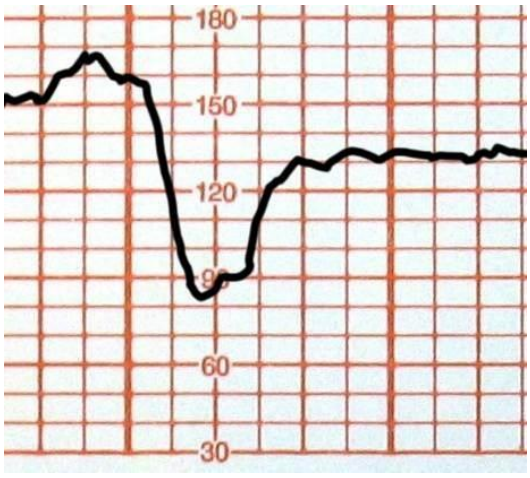


Decelerations that drop ≤70bpm or last for ≥60 seconds.

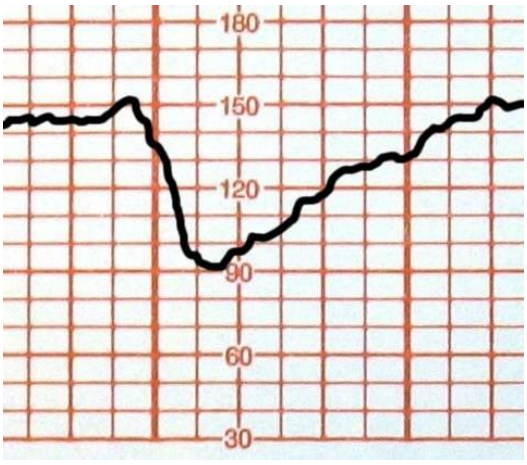




Variable decelerations occurring in the context of baseline tachycardia.

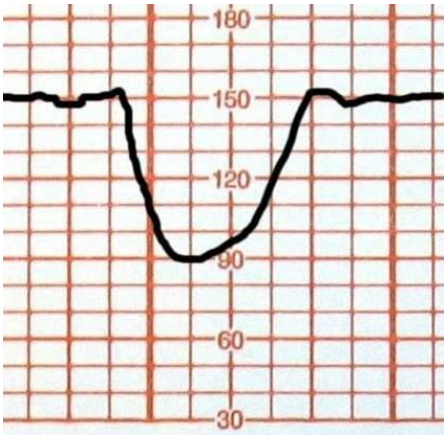


Overshoots following the variable deceleration.

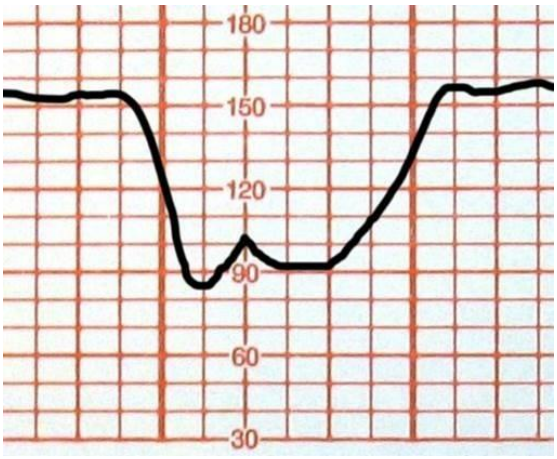


Continuation of baseline rate at a lower level than prior to the deceleration.

Slow return to baseline.



Decelerations in the context of minimal variability.



Biphasic decelerations.

We know from the literature that several types of complicated variables have the same significance in predicting acidosis as late decelerations. It is definitely easier to agree on whether a deceleration is abrupt or gradual than on what it looks like. Once we have defined it as an abrupt deceleration that has any features of complicated variables (especially if it does not recover by the end of the contraction, whether the recovery is abrupt or gradual!) it will be a complicated variable and should be used as a feature to classify the tracing.

The EFM tracing is classified as abnormal if complicated variable decelerations are repetitive (≥ 3).

Responding to an Atypical or Abnormal FHR

Once you have identified that the fetal heart rate is either atypical or abnormal, you then need to act on it. First and foremost, consider the total clinical picture as it provides you with so much information on the mother and the fetus and will help you to make decisions as you move forward in managing the identified FHR pattern.

Identify the potential causes (maternal, fetal, placental) for the FHR tracing that you are seeing. If the cause is something that can be corrected, correct it.

Institute Intrauterine Resuscitation as required.

The goal of intrauterine resuscitation is to improve uterine blood flow, umbilical circulation and fetal-maternal oxygen saturation.

Actions involved in intrauterine resuscitation include:

- Change maternal position (to left or right lateral)
- Stop or decrease oxytocin
- Temporarily increase IV rate, if indicated
- Perform vaginal examination to rule out cord prolapse and to relieve pressure from the presenting part on the cord
- Give careful consideration to administering maternal oxygen, if appropriate administer O2 via tight fitting facemask at 8-10L/minute

There is often confusion about the appropriate use of oxygen during intrauterine resuscitation. The ALARM Program provides practitioners with up to date evidence on the use of administering oxygen to a woman in labour as part of intrauterine resuscitation: "Maternal O2 supplementation should be reserved for maternal hypoxia or hypovolemia..." (ALARM 22nd Edition p.292). Careful consideration to the indications for administering oxygen as part of an intrauterine resuscitation is necessary.

- Tocolysis in the presence of tachysystole (e.g., nitroglycerin)
- Modify or pause pushing efforts in the second stage of labour
- Support woman / family
- Communicate / Document
- Maintain close maternal/fetal surveillance
- **Prepare for rapid delivery** if required OR **determine fetal well-being**. This can be done with fetal scalp stimulation - gently rubbing the fetal head to illicit a response, (remember not to do this while the fetus is experiencing a deceleration), or fetal scalp sampling for either pH or lactate.

Have a burning question to submit to the National FHS Steering Committee?

Email them to larivard@cmnrp.ca

- Delayed Cord Clamping
- Electonic Fetal Monitoring and Failure to Rescue
- CTG Monitoring Myths, Truths, & Something New
- Interpreting Umbilical Cord Blood Cases: Whats the Secret?
- Systematic Approach to Interpretation of EFM Tracings

The National FHS Steering Committee is composed of an interprofessional group of FHS Experts from varying geographies and representation of all Provinces and Territories of Canada.