

BEDSIDE COMMUNICATION TOOL

Intermittent Auscultation

PRIMARY NURSE/MIDWIFE

Reports

- Existing **RISK FACTORS**
- Additional **RISK FACTORS** developed in labour

PRIMARY NURSE/MIDWIFE

Reports

- Location of fetal back
- Contraction pattern
 - Frequency Duration
 - Intensity Resting Tone
- MHR
- Baseline rate
- Time baseline rate established
- Rhythm
- Presence of accelerations
- Presence of decelerations & actions taken
- Classification
 - Normal Abnormal

PRIMARY RN/RM & INCOMING CARE PROVIDER

- Establish management plan
- Communicate with team and Document

BEDSIDE COMMUNICATION TOOL

Electronic Fetal Monitoring

PRIMARY NURSE/MIDWIFE

Reports

- Existing **RISK FACTORS**
- Additional **RISK FACTORS** developed in labour
- Indication for EFM

INCOMING CARE PROVIDER

Interprets the tracing

- Contraction pattern
 - Frequency Duration
 - Resting time
- MHR
- Baseline
- Variability
- Accelerations
- Decelerations
- Classification
 - Normal Atypical Abnormal

PRIMARY NURSE/MIDWIFE

- Shares their interpretation to incoming provider
- Interpretation and classification discussed

PRIMARY RN/RM & INCOMING CARE PROVIDER

- Establish management plan
- Communicate with team and Document

Intrapartum INTERMITTENT AUSCULTATION (IA) Classification Table

(Adapted from SOGC, 2020)

Parameters	NORMAL	ABNORMAL
Uterine Activity	<ul style="list-style-type: none"> Normal 	<ul style="list-style-type: none"> Tachysystole
Baseline	<ul style="list-style-type: none"> 110-160 bpm 	<ul style="list-style-type: none"> Less than 110 bpm Greater than 160 bpm Rate changing over time*
Rhythm	<ul style="list-style-type: none"> Regular 	<ul style="list-style-type: none"> Irregular
Accelerations	<ul style="list-style-type: none"> May be present** 	<ul style="list-style-type: none"> Not applicable – absence of accelerations does not indicate abnormal
Decelerations	<ul style="list-style-type: none"> Not heard 	<ul style="list-style-type: none"> Audible or counted
ACTIONS:	<p>Always:</p> <ul style="list-style-type: none"> Focus on communication and teamwork including the birthing person and family Evaluate FHS considering the overall clinical picture Actions often occur simultaneously 	
	<ul style="list-style-type: none"> Continue to monitor by IA and provide supportive care Promote comfort and fetal oxygenation 	<ul style="list-style-type: none"> Change patient position and repeat IA OR immediately initiate EFM If deceleration persists after next contraction, initiate EFM if not already initiated to confirm FHR pattern If EFM is initiated for abnormal IA, IA can be resumed if the tracing is normal for 20 minutes and no maternal-fetal risk factors are identified based on review of the overall clinical picture If uncertain whether you heard a deceleration or if EFM is unavailable, reposition the person and listen after the next contraction. If decelerations are confirmed by IA, EFM is recommended in order to confirm the fetal heart rate pattern Intervene to improve blood flow and oxygenation Notify primary health care provider

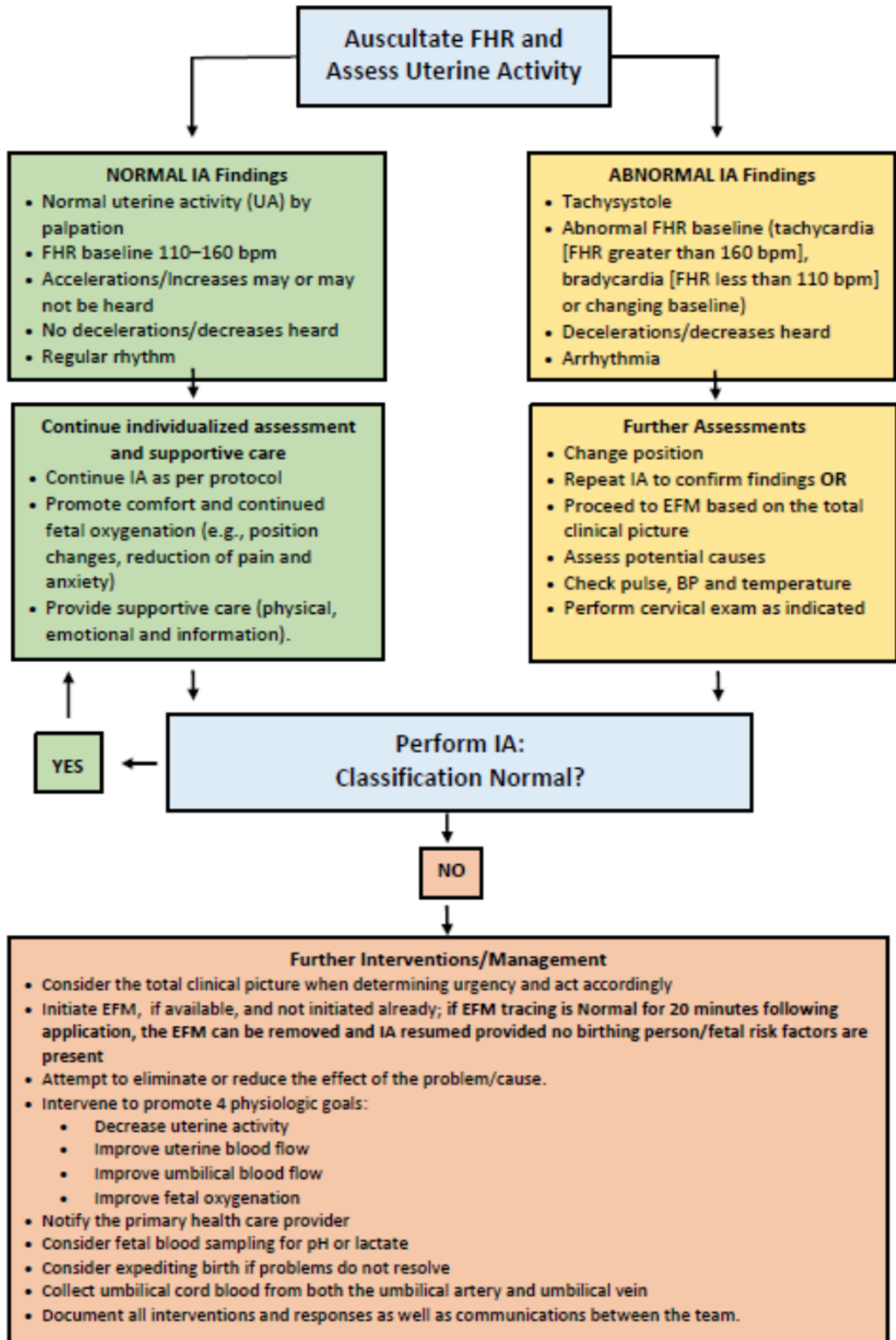
Notes:

* Increasing or decreasing FHR baseline over time: FHR baseline increases over time are concerning (e.g., initial FHR baseline is 130 bpm, 2 hours later the baseline is reassessed as 150 bpm, and then 1 hour after that the baseline is 160 bpm).

** Additional information: Fetal movement is a sign of fetal well-being and may be accompanied by accelerations. However, the *absence* of accelerations does not mean abnormal classification. If fetal movement is felt or seen, it should be documented and considered as part of the total clinical picture.

IA Decision Support Tool

Intermittent Auscultation in labour for healthy term pregnancies without Risk factors for adverse perinatal outcomes



RISK FACTORS

(Where use of EFM *may be* beneficial)

Antenatal Conditions		
	EFM is recommended	EFM should be considered
Maternal	<ul style="list-style-type: none"> Hypertensive disorders of pregnancy Diabetes: Pre existing and gestational Medical disease (e.g. cardiac, significant anemia, hyperthyroidism, vascular and/or renal disease) Motor vehicle collision / trauma (EFM recommended for a minimum of 4-6 hours) Perception of reduced or absent fetal movements Antepartum hemorrhage 	<ul style="list-style-type: none"> *Pre-pregnant BMI >35 kg/m² Others factors (smoking, substance use, limited prenatal care) Advanced Age (AMA – greater than 35years as time of labour) <p>*consider FECG+/-IUPC if needed</p>
	EFM is recommended	EFM should be considered
Fetal	<ul style="list-style-type: none"> Intrauterine growth restriction Abnormal umbilical artery Doppler velocimetry Single umbilical artery Oligohydramnios Polyhydramnios Abnormal BPP or NST Significant fetal abnormality (compatible with life) Isoimmunization Multiple pregnancy Velamentous cord insertion 	<ul style="list-style-type: none"> 3 or more nuchal loops
Intrapartum Conditions		
	EFM is recommended	Consider
Maternal	<ul style="list-style-type: none"> Vaginal bleeding in labour Intrauterine infection/ Chorioamnionitis Previous C Section / Trial of labour after CS Prolonged ROM at term (>24 hours) Combined spinal-epidural analgesia Oxytocin induction or augmentation Post term pregnancy (> 42 weeks gestation) Labour dystocia Tachysystole Unable to reliably determine UA +/-or FHR with IA 	
Fetal	<ul style="list-style-type: none"> Abnormal FHR on auscultation Prematurity (<37⁰ weeks) Meconium staining of the amniotic fluid Breech presentation FHR Arrythmia 	

Antepartum NON-STRESS TEST (NST) Classification Table

(Adapted from SOGC, 2018)

Parameters	NORMAL	ATYPICAL	ABNORMAL
Baseline	<ul style="list-style-type: none"> 110-160 bpm 	<ul style="list-style-type: none"> 100-110 bpm Greater than 160 bpm for less than 30 minutes Rising baseline 	<ul style="list-style-type: none"> Less than 100 bpm Greater than 160 bpm for greater than 30 minutes Erratic baseline
Variability	<ul style="list-style-type: none"> Moderate (6-25 bpm) Minimal or absent (less than or equal to 5 bpm) for less than 40 minutes 	<ul style="list-style-type: none"> Minimal or absent (less than or equal to 5 bpm) for 40 to 80 minutes 	<ul style="list-style-type: none"> Minimal or absent (less than or equal to 5 bpm) for more than 80 minutes Marked (greater than 25 bpm) for more than 10 minutes Sinusoidal pattern
Accelerations – Term Fetus	<ul style="list-style-type: none"> Greater than or equal to 2 accelerations with an acme of greater than or equal to 15 bpm lasting a minimum of 15 seconds within less than 40 minutes of testing 	<ul style="list-style-type: none"> Less than or equal to 2 accelerations with an acme of greater than or equal to 15 bpm lasting a minimum of 15 seconds between 40-80 minutes of testing 	<ul style="list-style-type: none"> Less than or equal to 2 accelerations with an acme of greater than or equal to 15 bpm lasting a minimum of 15 seconds in greater than 80 minutes of testing
Accelerations – Preterm Fetus (less than 32 weeks)	<ul style="list-style-type: none"> Greater than or equal to 2 accelerations with an acme of greater than or equal to 10 bpm lasting a minimum of 10 seconds within less than 40 minutes of testing 	<ul style="list-style-type: none"> Less than or equal to 2 accelerations with an acme of greater than or equal to 10 bpm lasting a minimum of 10 seconds between 40-80 minutes of testing 	<ul style="list-style-type: none"> Less than or equal to 2 accelerations with an acme of greater than or equal to 10 bpm lasting a minimum of 10 seconds in greater than 80 minutes of testing
Decelerations	<ul style="list-style-type: none"> None, or Occasional variable deceleration lasting less than 30 seconds 	<ul style="list-style-type: none"> Variable decelerations, 30-60 seconds duration 	<ul style="list-style-type: none"> Variable decelerations, greater than 60 seconds duration Late decelerations*
ACTIONS:	<p>FURTHER ASSESSMENT OPTIONAL based on the total clinical picture</p> <ul style="list-style-type: none"> NST to be reviewed by the most responsible provider at the earliest opportunity; signed within 24 hours 	<p>FURTHER ASSESSMENT REQUIRED</p> <ul style="list-style-type: none"> NST to be reviewed by the most responsible provider at the time of classification 	<p>URGENT ACTION IS REQUIRED</p> <ul style="list-style-type: none"> NST to be reviewed by the most responsible provider IMMEDIATELY An overall assessment of the situation and further investigation with U/S or BPP is required. Some situations will require delivery

*Note – gradual decelerations that are not associated with identifiable contractions can be described as **episodic gradual decelerations** (SOGC, 2020)

Intrapartum ELECTRONIC FETAL MONITORING (EFM) Classification Table

(Adapted from SOGC, 2020)

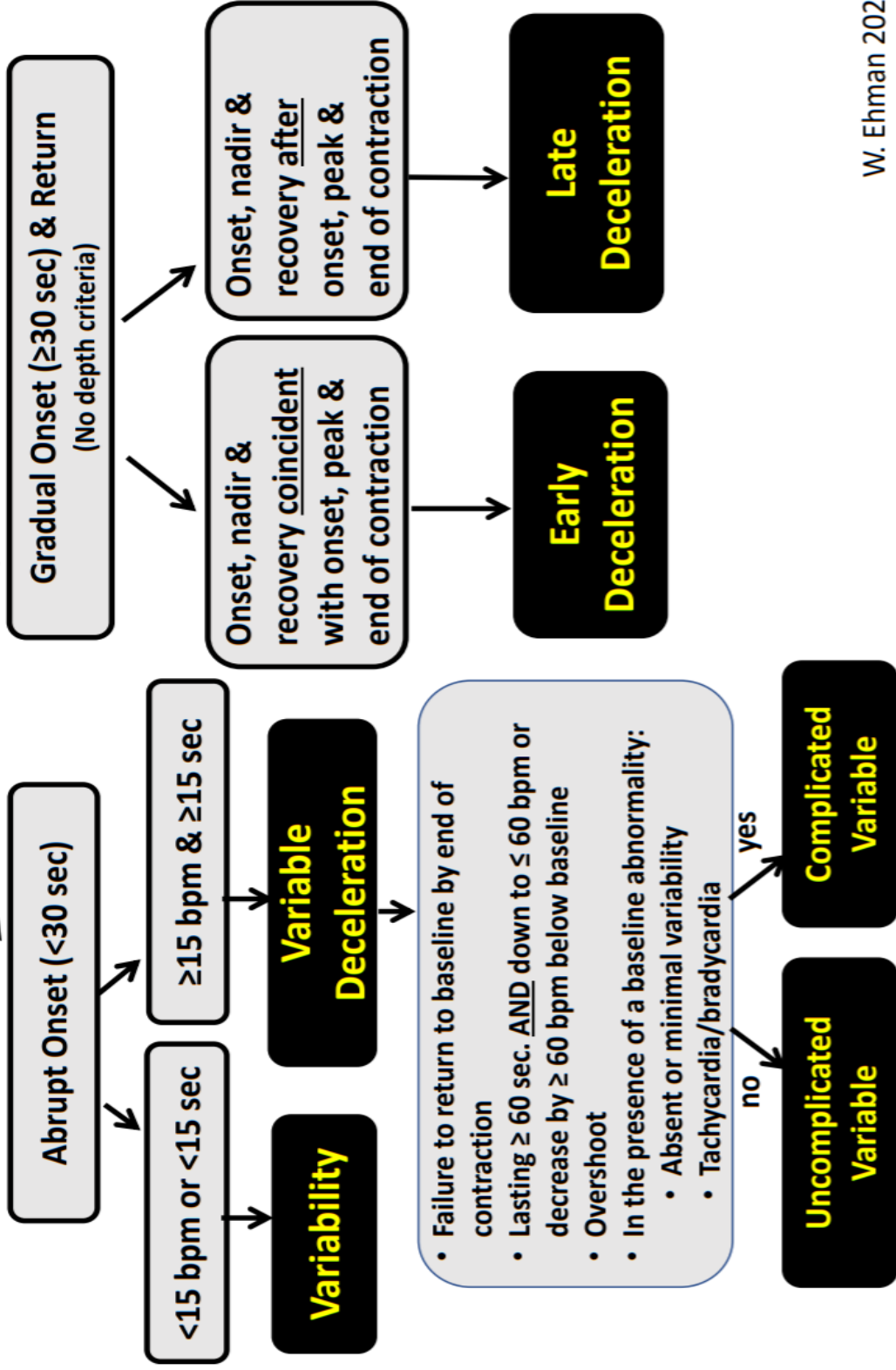
Parameters	NORMAL	ATYPICAL	ABNORMAL
Uterine Activity	<ul style="list-style-type: none"> • Normal • Tachysystole may be present with normal, atypical or abnormal FHR characteristics 		
Baseline	<ul style="list-style-type: none"> • 110-160 bpm 	<ul style="list-style-type: none"> • 100-110 bpm • Greater than 160 bpm for 30-80 minutes • Rising baseline • Arrhythmia (irregular rhythm) 	<ul style="list-style-type: none"> • Less than 100 bpm • Greater than 160 bpm for more than 80 minutes • Erratic baseline
Variability (amplitude in bpm)	<ul style="list-style-type: none"> • Moderate (6-25 bpm) • Minimal or absent (less than or equal to 5 bpm) for less than 40 minutes 	<ul style="list-style-type: none"> • Minimal or absent (less than or equal to 5 bpm) for 40-80 minutes 	<ul style="list-style-type: none"> • Minimal or absent (less than or equal to 5 bpm) for more than 80 minutes • Marked (greater than 25 bpm) for more than 10 minutes • Sinusoidal
Accelerations	<ul style="list-style-type: none"> • Spontaneous acceleration(s) (but not required to classify the tracing as normal) • Acceleration with scalp stimulation 	<ul style="list-style-type: none"> • Absence of acceleration with scalp stimulation 	<ul style="list-style-type: none"> • Usually absent • Accelerations, if present, do not change the classification of the tracing based on other characteristics
Decelerations	<ul style="list-style-type: none"> • None • Non-repetitive uncomplicated variable decelerations • Early decelerations 	<ul style="list-style-type: none"> • Repetitive uncomplicated variable decelerations • Non-repetitive complicated variable decelerations • Intermittent late decelerations • Single prolonged deceleration lasting more than 2 minutes but less than 3 minutes 	<ul style="list-style-type: none"> • Repetitive complicated variable decelerations • Recurrent late decelerations • Single prolonged deceleration lasting more than 3 minutes but less than 10 minutes
Clinical interpretation within the total clinical picture	<ul style="list-style-type: none"> • No evidence of fetal compromise 	<ul style="list-style-type: none"> • Physiologic response reflecting activation of compensatory mechanisms 	<ul style="list-style-type: none"> • Possible fetal compromise
Terminology	<p>Non-repetitive: 1 or maximum of 2 in a row Repetitive: greater than or equal to 3 in a row Intermittent: Decelerations occur with less than 50% of uterine contractions in any 20-minute window Recurrent: Decelerations occur with greater than or equal to 50% of uterine contractions in any 20-minute window</p>		

Response to Classified EFM Tracings

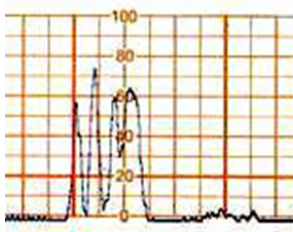
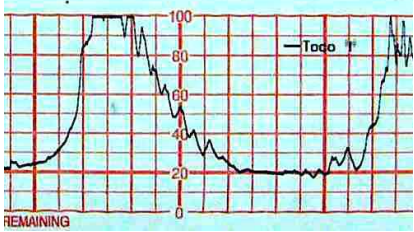
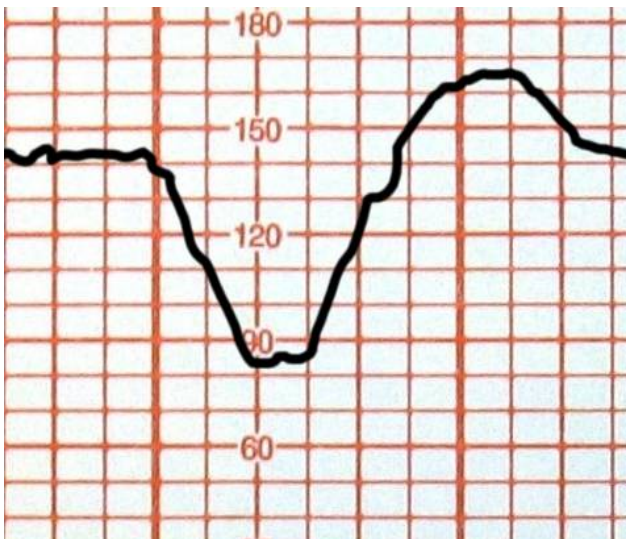
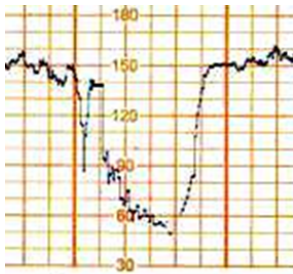
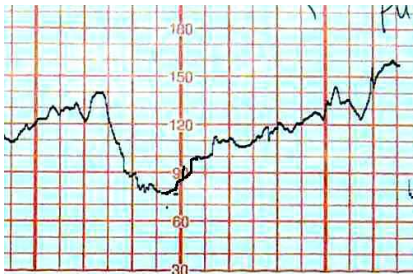
(Adapted from SOGC, 2020)

RESPONSE	NORMAL	ATYPICAL	ABNORMAL
ACTIONS: <ul style="list-style-type: none"> Always: <ul style="list-style-type: none"> Focus on communication and teamwork including the birthing person and family Evaluate FHS considering the overall clinical picture Actions often occur simultaneously Continue with monitor method, as indicated, and provide supportive care EFM may be interrupted for up to 30 minutes if maternal-fetal condition is stable and if oxytocin rate is stable 	VIGILANCE <ul style="list-style-type: none"> Vigilant assessment required, especially when combined features are present Determine significance/cause and correct reversible cause Initiate intrauterine resuscitation Determine duration of effect and reserve tolerance of fetus Consider fetal evaluation (scalp stimulation and/or fetal scalp blood sampling, ultrasound) Consider transfer/delivery if tracing persists or deteriorates 	ACTION REQUIRED <ul style="list-style-type: none"> Determine significance/cause and correct reversible cause Initiate intrauterine resuscitation Determine duration of effect and reverse tolerance of fetus Fetal scalp blood sampling if available Notify pediatric and anaesthesia services Expediate delivery (operative vaginal or cesarean delivery) unless delivery is imminent or there is evidence of normal fetal scalp blood sample 	

Decrease in FHR

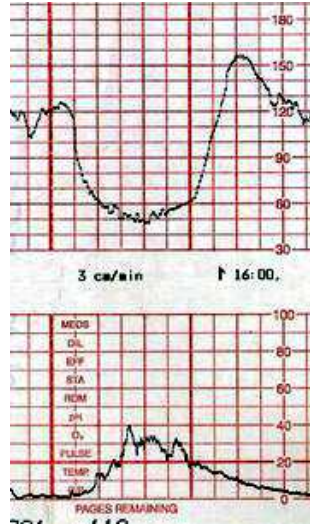
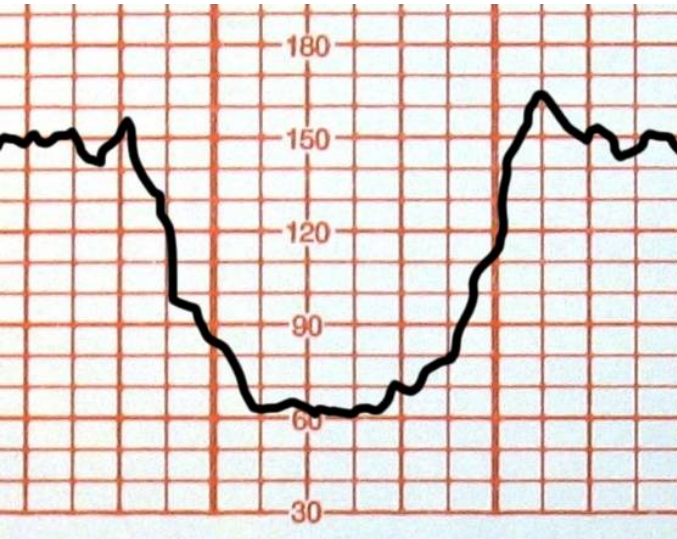


COMPLICATED VARIABLE DECELERATIONS

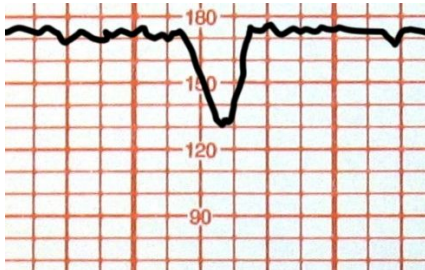
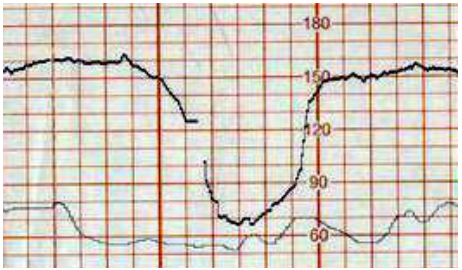


Failure to return to baseline by end of contraction.

Overshoot



Rule of 60s: Lasting ≥ 60 sec. AND down to ≤ 60 bpm or \downarrow by ≥ 60 bpm below baseline



Variable decel with baseline abnormality: Absent/minimal variability Tachycardia or Bradycardia

FH Controls:

Autonomic NS

- Sympathetic - ↑ HR, develops first
- Parasympathetic - ↓ HR, develops second

CNS

- Medullary controls
- Fetal behavioral states

Hormones

- in response to stress and hypoxemia to maximize fetal circulation
- Epinephrine
- Norepinephrine
- Arginine vasopressin
- Renin – Angiotensin-aldosterone

Baroreceptors

- Respond rapidly to changes in pressure within vessel
- ↑ BP → ↓ HR → ↓ cardiac output → restores BP

Chemoreceptors

- Respond slower to changes in concentration of O₂ and CO₂, and pH (after 50% decrease)
- Respond by ↑ or ↓ HR

Risk Factors:

Maternal

- Diabetes
- Hypertension
- Obesity (>35kg/m²)
- AMA
- Resp, CVS, renal conditions
- Substance use
- Anemia
- Uterine abnormalities
- Gestational age
- IUGR
- Multiples
- 2 vessel cord
- Oligo/poly-hydramnios
- Velamentous cord insertion
- Placental abnormalities
- Abnormal UA Doppler
- Fetal anomalies
- Rh isoimmunisation

Fetal

- 1 vein → placenta to fetus
- 2 arteries → fetus to placenta
- Higher HR and cardiac output
- ↑ Hgb concentration
- Fetal Hgb has an ↑ affinity for O₂ - able to maintain O₂ saturations at low PO₂ (shift Left)
- Amniotic fluid – cushion
- Wharton's jelly – cushions vessels in cord
- Fetal circulation – 3 shunts – maximize oxygen to vital organs

Whole Clinical Picture

Labour Assessments:

- GTPAL?
- Mode of previous delivery?
- Stage and phase of labour (what is normal for each?)
- How long in labour?
- Spontaneous vs. Induced vs. Augmented labour
- SROM vs. AROM → clear?
- Medications (epidural, narcotics)
- Maternal vital signs
- 4 P's
 - Passage (Bones, soft tissue, bladder, maternal positions)
 - Power (contraction frequency, duration, strength)
 - Passenger (gestation, position, risks)
 - Psyche (maternal coping)

Maternal Adaptations & Uterine Activity:

- Increased release of O₂ for use by the placenta (shift right)
- ↑ Blood flow to the uterine artery → highly susceptible to hypovolemia and blood loss → hypotension:
 - Position changes
 - Dehydration
 - Medications
 - Post-epidural hypotension
- Contractions
 - Blood flow to placenta is ↓ at 25-30mmHg and ceases at 50mmHg
 - Tachysystole
 - more than 5 contractions in 10 minutes averaged over 30 mins OR
 - Contraction longer than 90 sec
 - < 30 sec of resting tone

Fetal Scalp Blood Sampling - pH and Lactate Values

pH Value	Lactate Value*	Interpretation
≥ 7.25	< 4.2	Normal – repeat sampling in 30 minutes if FHR tracing abnormalities persist
7.21 – 7.24	4.2-4.8	Borderline – repeat sampling in 30 minutes or consider delivery if significant decrease in pH or increase in lactate
≤ 7.20	> 4.8	Abnormal – birth indicated

**Lactate values are applicable only to the Nova Biomedical Stat Strip lactate meter – currently the only lactate meter available in Canada.*

Adapted from Dore, S. & Ehman, W. (2020). SOGC clinical practice guideline: No. 396-Fetal health surveillance: Intrapartum consensus guideline. Journal of Obstetrics & Gynaecology Canada, 42(3), 316–348. <https://doi.org/10.1016/j.jogc.2019.05.007>

ADDITIONAL RESOURCES

