



CLINICAL PRACTICE GUIDELINE

# Fetal compromise (acute): Management if suspected

This document should be read in conjunction with the [Disclaimer](#)

## Aim

To identify suspected or actual fetal compromise and initiate early intervention to promote placental and umbilical blood flow to decrease risk of hypoxia and acidosis.

## Key points<sup>1</sup>

1. Fetal compromise in labour may be due to a variety of pathologies including placental insufficiency, uterine hyperstimulation, maternal hypotension, cord compression and placental abruption. Identification and management of reversible abnormalities may prevent unnecessary intervention.
2. Continuous electronic cardiotocograph (CTG) monitoring should be commenced when fetal compromise is detected at the onset of labour or develops during labour.
3. A normal CTG is associated with a low probability of fetal compromise and has the following features:
  - Baseline rate 110-160 bpm
  - Baseline variability 6-25 bpm
  - Accelerations of 15 bpm for 15 seconds
  - No decelerations.
4. The following features **are unlikely** to be associated with fetal compromise when occurring in isolation:
  - Baseline rate 100-109 bpm
  - Absence of accelerations
  - Early decelerations
  - Variable decelerations without complicating features.
5. The following features **may be** associated with significant fetal compromise and require further action (see management section on next page):
  - Baseline fetal tachycardia >160 bpm
  - Reduced or reducing baseline variability (3-5 bpm)
  - Rising baseline fetal heart rate (FHR)
  - Complicated variable decelerations
  - Late decelerations
  - Prolonged decelerations.

6. The following features **are likely** to be associated with significant fetal compromise and require immediate management, which may include urgent birth:
  - Prolonged bradycardia ( < 100bpm for > 5 minutes)
  - Absent baseline variability
  - Sinusoidal pattern
  - Complicated variable decelerations with reduced or absent baseline variability
  - Late decelerations with reduced or absent variability.
7. At any time in labour if there is difficulty auscultating the FHR or in attaining an adequate trace, the FHR can be monitored using a scalp electrode, where not contraindicated.<sup>1</sup> For contraindications and procedure, see Clinical Guideline, Fetal Heart Rate Monitoring.
8. Some intrapartum procedures / events can affect the FHR and should be documented e.g. vaginal examinations, inserting/ topping up an epidural<sup>1, 2</sup> and obtaining a fetal blood sample.<sup>1</sup>
9. There is not enough evidence to support or evaluate the effectiveness of maternal oxygen therapy in cases of suspected fetal compromise.<sup>3</sup>

## Management

For ALL suspected / recognised FHR abnormalities causing fetal compromise, immediate management includes:

- Call for assistance
- Inform the Labour and Birth Suite Co-ordinator, the Obstetric Registrar / Senior Registrar or Consultant for immediate review.
- Apply continuous CTG monitoring (if not already in progress).<sup>1</sup>
- Insert intravenous (IV) access if not in situ. Consider collecting blood for group and hold.
- Identify any reversible causes of FHR abnormality and initiate suitable action.<sup>1</sup>

Actions may include:

  - Maternal repositioning
  - Correction of maternal hypotension
  - Rehydration with IV fluid.
  - Stopping oxytocin infusion
  - Tocolysis for excessive uterine activity.<sup>1</sup>
- Consider further fetal evaluation or birth if significant abnormality<sup>1</sup>
- Escalate care to more experienced practitioner if required.<sup>1</sup>
- Do not leave the room / the woman unattended.

### Fetal heart rate (FHR) abnormality management

FHR ABNORMALITY	POSSIBLE REASONS	MANAGEMENT
<p><b>Bradycardia / prolonged deceleration</b></p>	<ul style="list-style-type: none"> <li>• Maternal hypotension<sup>2, 4</sup></li> <li>• Cord prolapse<sup>2, 4</sup> or compression<sup>4, 5</sup></li> <li>• Uterine hypertonia<sup>2, 4, 5</sup></li> <li>• Scar dehiscence<sup>4, 5</sup></li> <li>• Abruptio placentae<sup>4, 5</sup></li> <li>• Rapid fetal descent</li> <li>• Procedures may include:                             <ul style="list-style-type: none"> <li>➢ vaginal examinations</li> <li>➢ inserting/sitting for epidural insertion<sup>2</sup></li> <li>➢ obtaining a fetal blood sample</li> </ul> </li> </ul>	<ol style="list-style-type: none"> <li>1. Reposition the woman<sup>6, 7</sup> – e.g. lateral position</li> <li>2. Administer bolus IV fluids<sup>5, 6</sup></li> <li>3. Discontinuation of oxytocin or decreasing rate of infusion ( if in progress)<sup>5, 7</sup></li> <li>4. Check the maternal blood pressure (BP)</li> <li>5. Check the maternal pulse – to differentiate maternal pulse rate from the fetal heart rate (FHR)</li> <li>6. Perform a VE to exclude cord prolapse or rapid cervical dilatation if the bradycardia persists.<sup>6</sup> Consider application of a fetal scalp electrode.</li> <li>7. Assess abdominal tone to exclude a tonic uterus<sup>2, 4</sup></li> <li>8. Prepare for assisted delivery or emergency caesarean section if bradycardia does not resolve.</li> </ol>
<p><b>Variable deceleration/s</b></p>	<ul style="list-style-type: none"> <li>• Cord compression<sup>2</sup></li> <li>• May be exacerbated by:                             <ul style="list-style-type: none"> <li>➢ Maternal positioning</li> <li>➢ Direct cord involvement e.g. cord entanglement, short or knotted cord</li> <li>➢ Oligohydramnios</li> <li>➢ Fetal activity</li> <li>➢ Abnormal uterine activity</li> </ul> </li> </ul>	<ol style="list-style-type: none"> <li>1. Reposition the woman<sup>6, 7</sup> – alternative side e.g. left lateral.</li> <li>2. Administer bolus IV fluids.</li> <li>3. Perform a VE to exclude cord prolapse or rapid cervical dilatation if the variables persist.<sup>2, 6</sup> Consider application of a fetal scalp electrode.</li> <li>4. Assess uterine tone</li> <li>5. Consider amnioinfusion e.g. circumstances of oligohydramnios<sup>4</sup>.</li> </ol>
<p><b>Late deceleration/s</b></p>	<ul style="list-style-type: none"> <li>• Fetal hypoxia<sup>2</sup> – uteroplacental</li> </ul>	<ol style="list-style-type: none"> <li>1. Reposition the woman<sup>2, 6, 7</sup> – alternative side e.g. left lateral</li> </ol>

FHR ABNORMALITY	POSSIBLE REASONS	MANAGEMENT
	<p>insufficiency<sup>4</sup></p> <ul style="list-style-type: none"> <li>• Decreased fetal oxygenation may be caused by: <ul style="list-style-type: none"> <li>➤ Uterine Hyperstimulation<sup>4</sup></li> <li>➤ Maternal conditions e.g. hypertension, smoking, hypotension, cardiac status, anaemia, diabetes<sup>4</sup></li> <li>➤ Fetal/placental e.g. post-term, intrauterine growth restriction, abruptio placentae, haemorrhage<sup>4</sup></li> </ul> </li> </ul>	<ol style="list-style-type: none"> <li>2. Increase bolus IV fluids<sup>4</sup></li> <li>3. Assess maternal vital signs including uterine tone/activity<sup>4</sup></li> <li>4. Cease oxytocic<sup>2, 4</sup></li> <li>5. Consider tocolytic therapy e.g. terbutaline<sup>4</sup></li> <li>6. Initiate procedures to assist determination of acid-base status e.g. fetal scalp blood sampling<sup>4</sup></li> <li>7. Prepare for assisted delivery or emergency caesarean section</li> </ol>
<b>Sinusoidal pattern</b>	<ul style="list-style-type: none"> <li>• Cerebral hypoxia<sup>2</sup></li> <li>• Severe anaemia e.g. fetal-maternal transfusion, Rh isoimmunisation, fetal infection, antepartum haemorrhage (APH), twin-to-twin transfusion<sup>2</sup></li> </ul>	<ol style="list-style-type: none"> <li>1. Cease oxytocic.</li> <li>2. Administer bolus IV fluids</li> <li>3. Perform maternal vital signs – including vaginal discharge, pain</li> <li>4. Assess uterine tone</li> <li>5. Collect equipment that may be required e.g. real time scanner, blood collection tubes for Kleihauer</li> <li>6. Prepare for emergency caesarean.<sup>2</sup></li> </ol>
<b>Fetal tachycardia</b>	<ul style="list-style-type: none"> <li>• Maternal tachycardia<sup>2, 4</sup></li> <li>• Maternal fever<sup>2, 4</sup></li> <li>• Extreme prematurity<sup>2</sup></li> <li>• Drugs e.g. beta sympathomimetics, methamphetamines<sup>2, 4, 6</sup></li> <li>• Fetal hypoxia<sup>2</sup></li> <li>• Infection-fetal<sup>2</sup>, maternal<sup>6</sup></li> <li>• Fetal tachyarrhythmia<sup>2, 4</sup></li> <li>• Maternal dehydration<sup>4, 5</sup></li> <li>• Maternal medical disorders<sup>6</sup></li> </ul>	<ol style="list-style-type: none"> <li>1. Reposition the woman<sup>2, 7</sup></li> <li>2. Assess maternal pulse, temperature, and BP<sup>2, 4</sup></li> <li>3. Provide IV hydration<sup>2</sup> / increase rate<sup>4</sup></li> <li>4. Consider discontinuation of oxytocin infusion, uterotonic agents, and consider tocolysis</li> <li>5. Antibiotics may be required<sup>6</sup></li> </ol>

FHR ABNORMALITY	POSSIBLE REASONS	MANAGEMENT
<b>Decreased variability</b>	<ul style="list-style-type: none"> <li>• Fetal acidaemia<sup>6</sup></li> <li>• Fetal sleep state<sup>6</sup></li> <li>• Medications e.g. opioids, magnesium sulphate, <math>\beta</math>-blockages<sup>6</sup></li> <li>• Extreme prematurity<sup>6</sup></li> <li>• Suspected abnormalities of the fetus</li> <li>• Supine Hypotension</li> <li>• Hypoglycaemia</li> </ul>	<ol style="list-style-type: none"> <li>1. Reposition the woman<sup>6</sup></li> <li>2. Hydration – administer IV fluid bolus<sup>6</sup></li> <li>3. Fetal scalp stimulation / vibroacoustic stimulation (if no FHR accelerations)<sup>6</sup></li> </ol>

### RANZCOG FHR Abnormality Explanations<sup>1</sup>

- **Prolonged deceleration:** FHR decrease below baseline for 90sec- 5min.
- **Prolonged bradycardia:** <100bpm for >5min- requires immediate management, which may include urgent delivery.
- **Variable deceleration/s:** Repetitive or intermittent drop in FHR with rapid onset & recovery. Commonly occur with contractions.
- **Late deceleration/s:** Repetitive uniform FHR decreases with usually slow onset mid to late contraction & nadir >20 seconds after contraction peak & ending after contraction.

Note: In the presence of reduced variability & no accelerations, would also include decelerations <15bpm.

- **Sinusoidal pattern:** Persistent regular oscillation of baseline FHR in a smooth undulating sine wave. Absent variability & no accelerations.
- **Fetal tachycardia:** >160bpm.
- **Decreased variability:**
  - Reduced: 3-5bpm \* Caution advised when interpreting variability through external transducer.
  - Absent: <3bpm.

### Management of Excessive uterine activity<sup>1</sup>

#### Without FHR abnormalities:

- Tachysystole (>5 active labour contractions in 10 minutes without FHR abnormality)
- Uterine hypertonus (contractions lasting >2minutes or contractions occurring within 60 seconds of each other, without FHR abnormality)

Management involves continuous CTG; consider reducing or ceasing oxytocin infusion; the midwife staying with the woman until normal uterine activity returns; and considering tocolysis.

**With FHR abnormalities:**

- Uterine hyperstimulation (tachysystole or uterine hypertonus accompanied by FHR abnormalities)

Management involves continuous CTG; consider reducing or ceasing oxytocin infusion; the midwife staying with the woman until normal uterine activity returns; considering tocolysis; or consideration of urgent birth.

**Tocolysis: Terbutaline 250 micrograms subcutaneous.<sup>1</sup> See Clinical Guidelines, Pharmacy, A-Z Medications, [Terbutaline](#) for current guidance.**

## References

1. RANZCOG. Intrapartum fetal surveillance: Clinical guideline- 3rd ed. **RANZCOG**. 2014. Available from: <https://www.ranzcog.edu.au/intrapartum-fetal-surveillance-clinical-guidelines.html>.
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3. Fawole B, Hofmeyr GJ. Maternal oxygen administration for fetal distress (Review). **Cochrane Database of Systematic Reviews**. 2012(12). Available from: <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD000136.pub2/pdf>.
4. Menihan CA, Kopel E. Electronic Fetal Monitoring. Concepts and Applications. 2nd ed. Philadelphia: **Wolters Kluwer / Lippincott Williams & Wilkins**; 2008.
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7. Garite TJ, Simpson KR. Intrauterine Resuscitation During Labor. **Clinical Obstetrics and Gynecology**. 2011;54(1):28-9.

## Related WNHS policies, procedures and guidelines

KEMH Clinical Guidelines:

Obstetrics & Gynaecology: [Fetal Heart Rate Monitoring](#)

Pharmacy: [Terbutaline](#)

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