

Companions to Management Series



FETAL SURVEILLANCE IN LABOUR

The
Welfare of Women



Fetal Surveillance in Labour

Regular and accurate fetal surveillance is vital in detecting fetuses that are becoming compromised in labour, and for initiating appropriate action to reduce their risk of intrapartum injury or death.



Clinical Relevance

Labour is a stressful period for the fetus. A lack of oxygen supply to the fetus can lead to cell death in the brain and subsequent neurological impairment, including cerebral palsy and even fetal death. However, not all cases of cerebral palsy are the result of problems in labour.

There may be a lack of oxygen supply to the fetus if there is a **lack of oxygen supply from the mother to the placenta** (maternal dehydration, maternal illness, maternal blood loss); the **transfer of oxygen at the placenta is reduced** (too many contractions, especially with oxytocin use, placental abruption or uterine rupture); or **poor placental function** (e.g. in pre-eclampsia or growth restriction).

The normal fetal heart rate

The normal fetal heart rate (FHR) is usually between 110 and 160 beats per minute (bpm).

There may be accelerations in the FHR – brief increases in the heart rate, often at the same time as fetal movements. This is a reassuring feature that the fetus is well.

The abnormal fetal heart rate

Bradycardia is a FHR of less than 110 bpm for more than 5 minutes. It is often associated with acute severe compromise (e.g. placental abruption, cord prolapse, uterine rupture).

Tachycardia is a FHR of more than 160 bpm for at least three contractions. This may be related to maternal fever, maternal tachycardia, fetal infection, or fetal hypoxia.

Late or prolonged decelerations occur if the heart rate falls more than 20 seconds after the start of a contraction and takes more than 30 seconds to recover back to the baseline, or a deceleration lasting more than 3 minutes.

How to perform intermittent auscultation

Palpate the abdomen to assess the fetal position.

Place the Pinard stethoscope or handheld Doppler over the fetal back as this is where the fetal heart can be best heard.

At the same time palpate the woman's radial pulse to check that the fetal heart that you are hearing is different to the maternal pulse that you are feeling.

Listen for at least 60 seconds. This should be during and at least 30 seconds after a contraction, if present.

A handheld Doppler (if available) may be preferable, especially in higher risk women.

Make a record of:

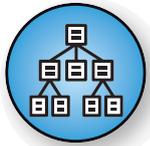
- the baseline FHR (a single number in bpm)
- the presence or absence of accelerations and decelerations
- the number of contractions in 10 minutes
- the presence or absence of fetal movements
- the maternal heart rate.

Continuous electronic fetal monitoring (cEFM)

Continuous monitoring of the fetal heart may be possible in some settings if a cardiotocograph (CTG) is available. There is no evidence of better outcomes in low risk women and it may lead to unnecessary intervention. In patients with risk factors for fetal compromise the use of cEFM can improve neonatal outcomes – it should therefore be utilised if available.

Risk Factors for Fetal Compromise	
Antenatal	Intrapartum
<ul style="list-style-type: none">• Twins	<ul style="list-style-type: none">• Meconium-stained liquor
<ul style="list-style-type: none">• Previous caesarean section/uterine surgery	<ul style="list-style-type: none">• Bleeding/antepartum haemorrhage
<ul style="list-style-type: none">• High blood pressure or pre-eclampsia	<ul style="list-style-type: none">• Preterm labour
	<ul style="list-style-type: none">• Suspected chorioamnionitis
	<ul style="list-style-type: none">• Clinically small baby or reduced liquor volume
	<ul style="list-style-type: none">• Prolonged labour
	<ul style="list-style-type: none">• Maternal temperature or tachycardia (suggesting infection)
	<ul style="list-style-type: none">• Prolonged rupture of membranes
	<ul style="list-style-type: none">• Malpresentation
	<ul style="list-style-type: none">• Induction of labour and use of oxytocin

Meconium staining of the liquor can be a sign of fetal compromise, especially when it is thick. There is also a risk of the fetus aspirating the meconium into their lungs, and this is more likely if there is fetal distress. The presence of meconium should prompt consideration of delivery (or transfer to another health unit for this, or closer monitoring) – especially if there are other risk factors or FHR abnormalities.



Management Algorithm

1. Admission assessment

- Take a history and perform examination
- Assess for risk factors – is it appropriate for this woman to deliver in this facility or does she need to be transferred for higher level care?

Auscultate the FHR for at least 60 seconds (including during/after a contraction if present)

2. First stage of labour

- Auscultate FHR every 15 minutes.

FHR under 110 bpm for more than 5 minutes

- Baby requires immediate delivery:
 - Call for help
 - Lie the woman on her left side
 - Vaginal examination to assess for cord prolapse
 - Arrange immediate transfer if necessary

FHR more than 160 bpm for at least 3 contractions

- Assess for signs of infection (e.g. maternal pyrexia)
If present, treat with broad spectrum antibiotics (e.g. IV metronidazole and cefuroxime/amoxicillin/ampicillin)
- Commence IV fluids (e.g. normal saline 500 mL)
- Lie the woman on her left side
- Stop oxytocin infusion if being used

Expedite delivery (or urgent referral to a higher level healthcare facility) if the fetal tachycardia is persistent beyond 30 min or worsening (more than 180 bpm); if decelerations are also present; or if the mother is unwell

Decelerations starting more than 20 seconds after onset of contractions and which take more than 30 seconds to recover, or

Decelerations lasting longer than 3 minutes

- Lie the woman on her left side
- Stop oxytocin infusion if being used

- If there are prolonged contractions, or less than 45 seconds break between contractions, use tocolytics to reduce contractions (e.g. salbutamol, terbutaline, ritodrine, nitroglycerine)
- Start IV fluids (e.g. normal saline 500 mL)
- If there is no significant rapid improvement in the FHR, arrange immediate delivery by caesarean section or transfer if necessary

3. Second stage of labour

- Auscultate FHR every 5 minutes
- In high risk women auscultate after every contraction

FHR under 110 bpm for more than 5 minutes

- Baby requires immediate delivery
 - Call for help
 - Lie the woman on her left side
 - Vaginal examination to assess for cord prolapse
 - Assess for episiotomy to expedite delivery
 - Perform assisted vaginal delivery if skills available

FHR more than 160 bpm for at least 3 contractions

- Continue pushing
- Commence IV fluids (e.g. normal saline 500 mL)
- Assess for signs of infection (e.g. maternal pyrexia)

If present, treat with broad spectrum antibiotics (e.g. IV metronidazole and cefuroxime/amoxicillin/ampicillin)
- Expedite delivery (or urgent referral to a higher level healthcare facility) if the fetal tachycardia is persistent beyond 30 min or worsening (more than 180 bpm); if decelerations are also present; or if the mother is unwell – episiotomy or assisted vaginal delivery should be considered if skills and equipment are available

Decelerations starting more than 20 seconds after onset of contractions and take more than 30 seconds to recover, or

Decelerations lasting longer than 3 minutes

- Lie the woman on her left side
- Stop pushing
- Stop oxytocin
- If there are prolonged contractions, or less than 45 seconds break between contractions, give tocolytics to reduce the frequency (salbutamol, terbutaline, ritodrine, nitroglycerine)
- Start IV fluids (e.g. normal saline 500 mL)
- If there is no rapid improvement in the FHR, expedite delivery – episiotomy or assisted vaginal delivery should be considered if skills and equipment are available
 - consider balance of time in transfer and likely timescale of delivery
- Prepare for newborn resuscitation



Associated GLOWM Resources

- Surveillance of fetal wellbeing
<https://www.glowm.com/womens-medicine-series-obstetric/heading/vol-5--surveillance-of-fetal-wellbeing/id/409213>
- Management of labour, cord prolapse, assisted vaginal delivery, neonatal resuscitation.
- ALARM international
<https://www.glowm.com/pdf/AIP%20Chap11%20Fetal%20Health%20Surveillance.pdf>

References

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