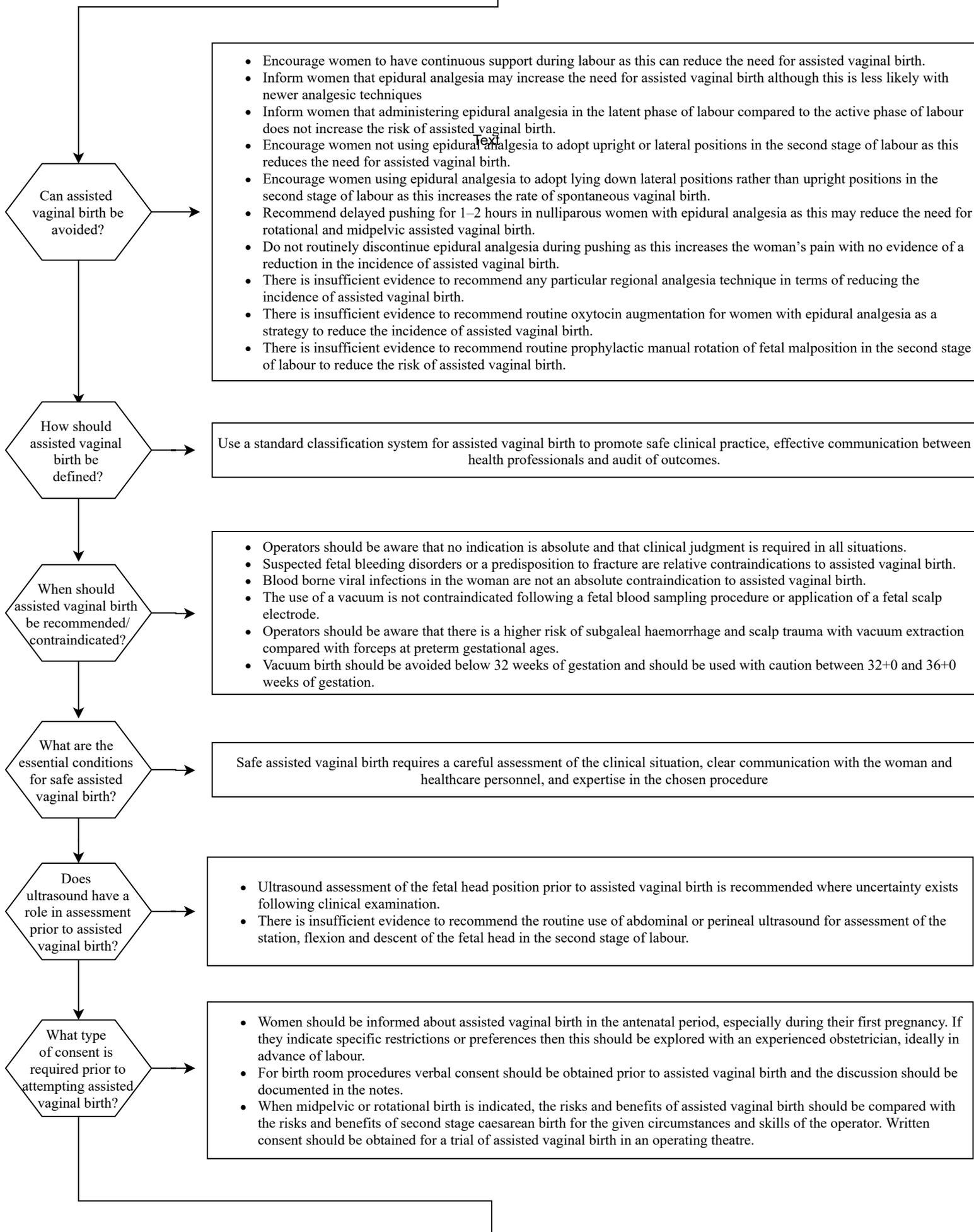


ASSISTED VAGINAL DELIVERY

Preparation for assisted vaginal birth



Performing assisted vaginal birth

Who should perform assisted vaginal birth?

- Assisted vaginal birth should be performed by, or in the presence of, an operator who has the knowledge, skills and experience necessary to assess the woman, complete the procedure and manage any complications that arise.
- Advise obstetric trainees to achieve expertise in spontaneous vaginal birth prior to commencing training in assisted vaginal birth.
- Ensure obstetric trainees receive appropriate training in vacuum and forceps birth, including theoretical knowledge, simulation training and clinical training under direct supervision.
- Competency should be demonstrated before conducting unsupervised births.
- Complex assisted vaginal births should only be performed by experienced operators or under the direct supervision of an experienced operator.

Who should supervise assisted vaginal birth?

An experienced operator, competent at midpelvic births, should be present from the outset to supervise all attempts at rotational or midpelvic assisted vaginal birth.

Where should assisted vaginal birth take place?

- Non-rotational low-pelvic and lift out assisted vaginal births have a low probability of failure and most procedures can be conducted safely in a birth room.
- Assisted vaginal births that have a higher risk of failure should be considered a trial and be attempted in a place where immediate recourse to caesarean birth can be undertaken.

What instruments should be used for assisted vaginal birth?

- The operator should choose the instrument most appropriate to the clinical circumstances and their level of skill.
- Operators should be aware that forceps and vacuum extraction are associated with different benefits and risks; failure to complete the birth with a single instrument is more likely with vacuum extraction, but maternal perineal trauma is more likely with forceps.
- Operators should be aware that soft cup vacuum extractors have a higher rate of failure but a lower incidence of neonatal scalp trauma.
- Rotational births should be performed by experienced operators; the choice of instrument depending on the clinical circumstances and expertise of the individual. The options include Kielland's rotational forceps, manual rotation followed by direct traction forceps or vacuum, and rotational vacuum extraction.

When should vacuum-assisted birth be discontinued and how should a discontinued vacuum procedure be managed?

- Discontinue vacuum-assisted birth where there is no evidence of progressive descent with moderate traction during each pull of a correctly applied instrument by an experienced operator.
- Complete vacuum-assisted birth in the majority of cases with a maximum of three pulls to bring the fetal head on to the perineum. Three additional gentle pulls can be used to ease the head out of the perineum.
- If there is minimal descent with the first two pulls of a vacuum, the operator should consider whether the application is suboptimal, the fetal position has been incorrectly diagnosed or there is cephalopelvic disproportion. Less experienced operators should stop and seek a second opinion. Experienced operators should re-evaluate the clinical findings and either change approach or discontinue the procedure.
- Discontinue vacuum-assisted birth if there have been two 'pop-offs' of the instrument. Less experienced operators should seek senior support after one 'pop-off' to ensure the woman has the best chance of a successful assisted vaginal birth.
- The rapid negative pressure application for vacuum-assisted birth is recommended as it reduces the duration of the procedure with no difference in maternal and neonatal outcomes.
- The use of sequential instruments is associated with an increased risk of trauma to the infant. However, the operator needs to balance the risks of a caesarean birth following failed vacuum extraction with the risks of forceps birth following failed vacuum extraction.
- Obstetricians should be aware of the increased neonatal morbidity following failed vacuum-assisted birth and/or sequential use of instruments, and should inform the neonatologist when this occurs to ensure appropriate care of the baby.
- Obstetricians should be aware of the increased risk of obstetric anal sphincter injury (OASI) following sequential use of instruments.

When should attempted forceps birth be discontinued and how should a discontinued forceps procedure be managed?

- Discontinue attempted forceps birth where the forceps cannot be applied easily, the handles do not approximate easily or if there is a lack of progressive descent with moderate traction.
- Discontinue rotational forceps birth if rotation is not easily achieved with gentle pressure.
- Discontinue attempted forceps birth if birth is not imminent following three pulls of a correctly applied instrument by an experienced operator.
- If there is minimal descent with the first one or two pulls of the forceps, the operator should consider whether the application is suboptimal, the position has been incorrectly diagnosed or there is cephalopelvic disproportion. Less experienced operators should stop and seek a second opinion. Experienced operators should re-evaluate the clinical findings and either change approach or discontinue the procedure.
- Obstetricians should be aware of the potential neonatal morbidity following a failed attempt at forceps birth and should inform the neonatologist when this occurs to ensure appropriate management of the baby.
- Obstetricians should be aware of the increased risk of fetal head impaction at caesarean birth following a failed attempt at birth via forceps and should be prepared to disimpact the fetal head using recognised manoeuvres.

What is the role of episiotomy in preventing maternal pelvic floor morbidity at assisted vaginal birth?

- Mediolateral episiotomy should be discussed with the woman as part of the preparation for assisted vaginal birth.
- In the absence of robust evidence to support either routine or restrictive use of episiotomy at assisted vaginal birth, the decision should be tailored to the circumstances at the time and the preferences of the woman. The evidence to support use of mediolateral episiotomy at assisted vaginal birth in terms of preventing OASI is stronger for nulliparous women and for birth via forceps.
- When performing a mediolateral episiotomy the cut should be at a 60 degree angle initiated when the head is distending the perineum.

Aftercare following assisted vaginal birth

Should prophylactic antibiotics be given?

- A single prophylactic dose of intravenous amoxicillin and clavulanic acid should be recommended following assisted vaginal birth as it significantly reduces confirmed or suspected maternal infection compared to placebo.
- Good standards of hygiene and aseptic techniques are recommended.

Should thromboprophylaxis be given?

Reassess women after assisted vaginal birth for venous thromboembolism risk and the need for thromboprophylaxis.

What analgesia should be given after birth?

In the absence of contraindications, women should be offered regular nonsteroidal antiinflammatory drugs (NSAIDs) and paracetamol routinely.

What precautions should be taken for care of the bladder after birth?

- Women should be educated about the risk of urinary retention so that they are aware of the importance of bladder emptying in the postpartum period.
- The timing and volume of the first void urine should be monitored and documented.
- A post void residual should be measured if urinary retention is suspected.
- Recommend that women who have received regional analgesia for a trial of assisted vaginal birth in theatre have an indwelling catheter in situ after the birth to prevent covert urinary retention. This should be removed according to the local protocol.
- Offer women physiotherapy-directed strategies to reduce the risk of urinary incontinence at 3 months.

How can psychological morbidity be reduced for the woman?

- Shared decision making, good communication, and positive continuous support during labour and birth have the potential to reduce psychological morbidity following birth.
- Review women before hospital discharge to discuss the indication for assisted vaginal birth, management of any complications and advice for future births. Best practice is where the woman is reviewed by the obstetrician who performed the procedure.
- Offer advice and support to women who have had a traumatic birth and wish to talk about their experience. The effect on the birth partner should also be considered.
- Do not offer single session, high-intensity psychological interventions with an explicit focus on 'reliving' the trauma.
- Offer women with persistent post-traumatic stress disorder (PTSD) symptoms at 1 month referral to skilled professionals as per the NICE guidance on PTSD.

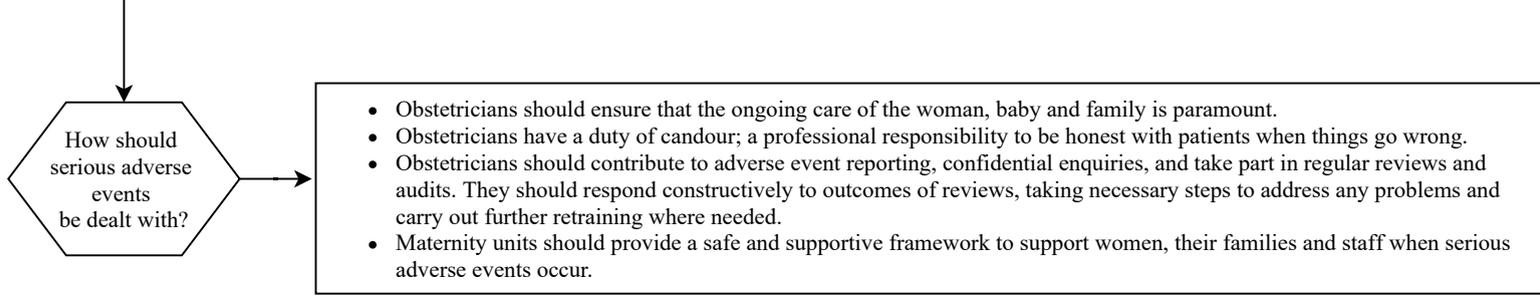
What information should women be given for future births?

- Inform women that there is a high probability of a spontaneous vaginal birth in subsequent labours following assisted vaginal birth.
- Individualise care for women who have sustained a third- or fourth-degree perineal tear, or who have ongoing pelvic floor morbidity.

Governance issues

What type of documentation should be completed for assisted vaginal birth?

- Documentation for assisted vaginal birth should include detailed information on the assessment, decision making and conduct of the procedure, a plan for postnatal care and sufficient information for counselling in relation to subsequent pregnancies. Use of a standardised proforma is recommended.
- Paired cord blood samples should be processed and recorded following all attempts at assisted vaginal birth.
- Adverse outcomes, including unsuccessful assisted vaginal birth, major obstetric haemorrhage, OASI, shoulder dystocia and significant neonatal complications should trigger an incident report as part of effective risk management processes.



Source: [Murphy DJ, Strachan BK, Bahl R, on behalf of the Royal College of Obstetricians Gynaecologists. Assisted Vaginal Birth. BJOG 2020; https://doi.org/10.1111/1471-0528.16092.](https://doi.org/10.1111/1471-0528.16092)

EXCESSIVE UTERINE ACTIVITY

Uterine tachysystole (>5 uterine contractions/10 minutes in at least two consecutive intervals) OR
Hypertonic uterus (prolonged contractions lasting more than 60 seconds)

Maternal assessment - Take history: assess risks (parity, previous uterine surgery) - Assess general condition: pain - Perform maternal observations: pulse, blood pressure, respiratory rate, urine colour and output - Perform abdominal examination: uterine tenderness, tonus, retraction ring - Perform vaginal examination: bleeding, and if FHR abnormality or suspected slow progress assess dilatation, cervix, caput and moulding	Fetal assessments Asses FHR using auscultation or cardiotocography if available
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Is FHR abnormal?

Yes → Stop oxytocin infusion
Give tocolytic: terbutaline 250 mcg IV slowly over five minutes OR salbutamol 10 mg in 1 L IV fluids (normal saline or Ringer's lactate) at 10 drops per minute
Reasses FHR

↓

Link to fetal heart rate algorithm

No → Identify probable cause

Identify probable cause

Is the woman on oxytocin for augmentation?

Yes → **Uterine tachysystole during augmentation**

No → Secondary arrest of cervical dilatation +/- other signs of obstructed labour?

Secondary arrest of cervical dilatation +/- other signs of obstructed labour?

Yes → Suspected obstructed labour

No → tense/tender uterus OR vaginal bleeding?

tense/tender uterus OR vaginal bleeding?

Yes → Suspected placental abruption

No → - Medical review to consider tocolytic
- Routine monitoring of uterine activity and FHR

Uterine tachysystole during augmentation

Suspected obstructed labour

Suspected placental abruption

- Reduce or stop oxytocin infusion
- Remain with the woman until normal uterine activity is achieved
- Reasses uterine contractions: frequency, tone in 30 min
- Continuous cardiotocography if available, or fetal heart rate auscultation every 15min in 1st stage, every 5 min in 2nd stage

Link to abnormal progress of labour algorithm

Severe pain OR bleeding?
OR Shock?

No → - Medical review to consider expediting delivery
- Regular observations every 15-30 min
- Continuous fetal heart rate monitoring if available, or regular intermittent auscultation

Yes → Is the woman fully dilated?

- Medical review to consider expediting delivery
- Regular observations every 15-30 min
- Continuous fetal heart rate monitoring if available, or regular intermittent auscultation

Is the woman fully dilated?

No → Urgent caesarean section
Prepare for neonatal resuscitation
Prepare for maternal resuscitation

Yes → Consider operative vaginal delivery

Urgent caesarean section
Prepare for neonatal resuscitation
Prepare for maternal resuscitation

Is FHR abnormal?

No → Link to fetal heart rate algorithm

Yes → Uterine contractions normal?

Uterine contractions normal?

No → Consider tocolitic

Yes → Consider cautious recommencement of oxytocin
Routine monitoring of uterine activity and FHR

Consider cautious recommencement of oxytocin
Routine monitoring of uterine activity and FHR

Link to normal labour algorithm

FETAL BRADYCARDIA

1 Fetal heart rate <100 bpm lasting 3min or more OR Late deceleration

2 **Maternal assessment**
 Assess general condition: constant severe pain
 Perform maternal observations: pulse, blood pressure, temperature.
 Perform abdominal examination: frequency and duration of contractions, tenderness, tone, uterine contour, fetal parts in abdomen
 Perform vaginal examination: membranes, bleeding, meconium, dilatation, cord prolapse, loss of fetal presenting part in pelvis

Management
 Position the woman on her left side, offer PO/IV fluids
 Continuous fetal heart rate monitoring if available
 Stop oxytocin if it is being administered
 Remain with the women and explain the situation to her and her companion
 Review by senior midwife or doctor

3 Identify probable cause

4 Is there constant pain AND/ OR vaginal bleeding?

5 Abnormal uterine contour OR Loss of presenting part OR fetal parts palpable in the abdomen?

11 Suspected **uterine rupture**

6 Tense/tender uterus?

12 Suspected **placental abruption**

7 Cord seen outside or felt in vagina below the presenting part?

13 **Cord prolapse**

8 SBP<100mmHg DBP <50?

14 **Maternal hypotension**

9 Any contraction lasting longer than 60 sec OR >5/10 min?

15 **Hyperstimulation**

10 Fetal heart rate abnormality of unknown cause

16 Rapid IV fluids infusion

17 - Stop oxytocin. Remove prostaglandins
 - Give tocolytic: terbutaline 250 mcg IV slowly over five minutes OR salbutamol 10 mg in 1 L IV fluids (normal saline or Ringer's lactate) at 10 drops per minute

18 Reasses for improvement of FHR after conservative measures in 15 min

19 Fetal heart rate <100 lasting 3 min or more?

26 - Reasses fetal heart rate in 9 min
 - Prepare for neonatal resuscitation

27 Persistent FHR <100 at 9 min

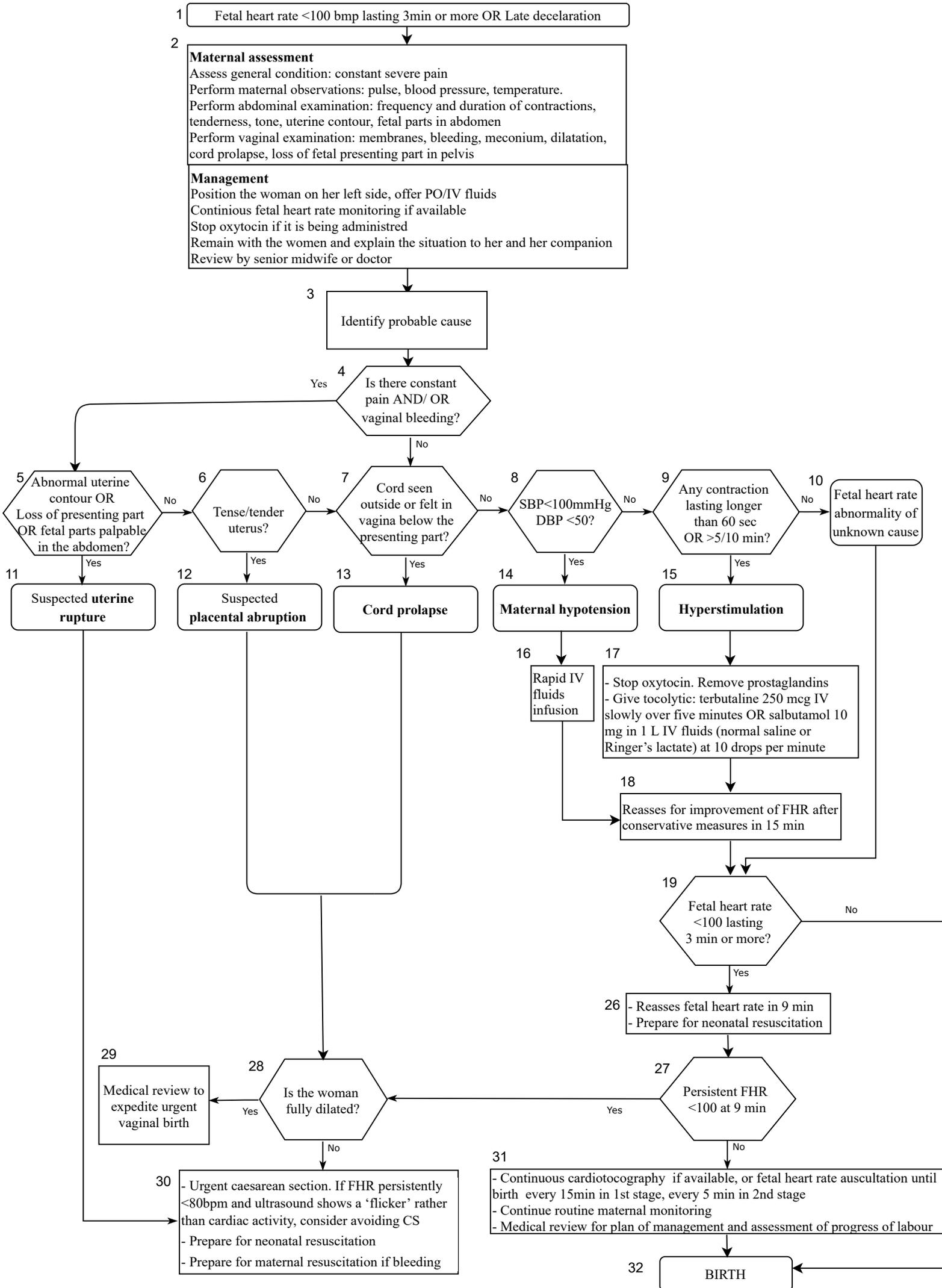
29 Medical review to expedite urgent vaginal birth

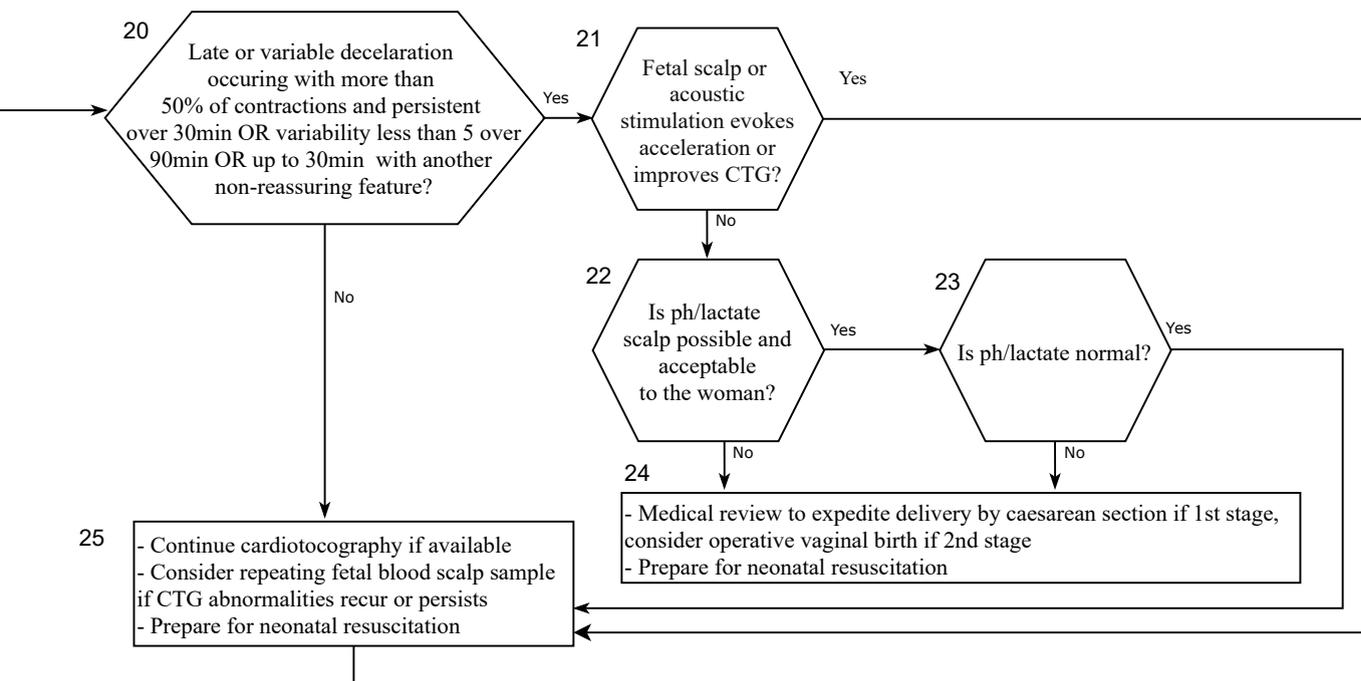
28 Is the woman fully dilated?

30 - Urgent caesarean section. If FHR persistently <80bpm and ultrasound shows a 'flicker' rather than cardiac activity, consider avoiding CS
 - Prepare for neonatal resuscitation
 - Prepare for maternal resuscitation if bleeding

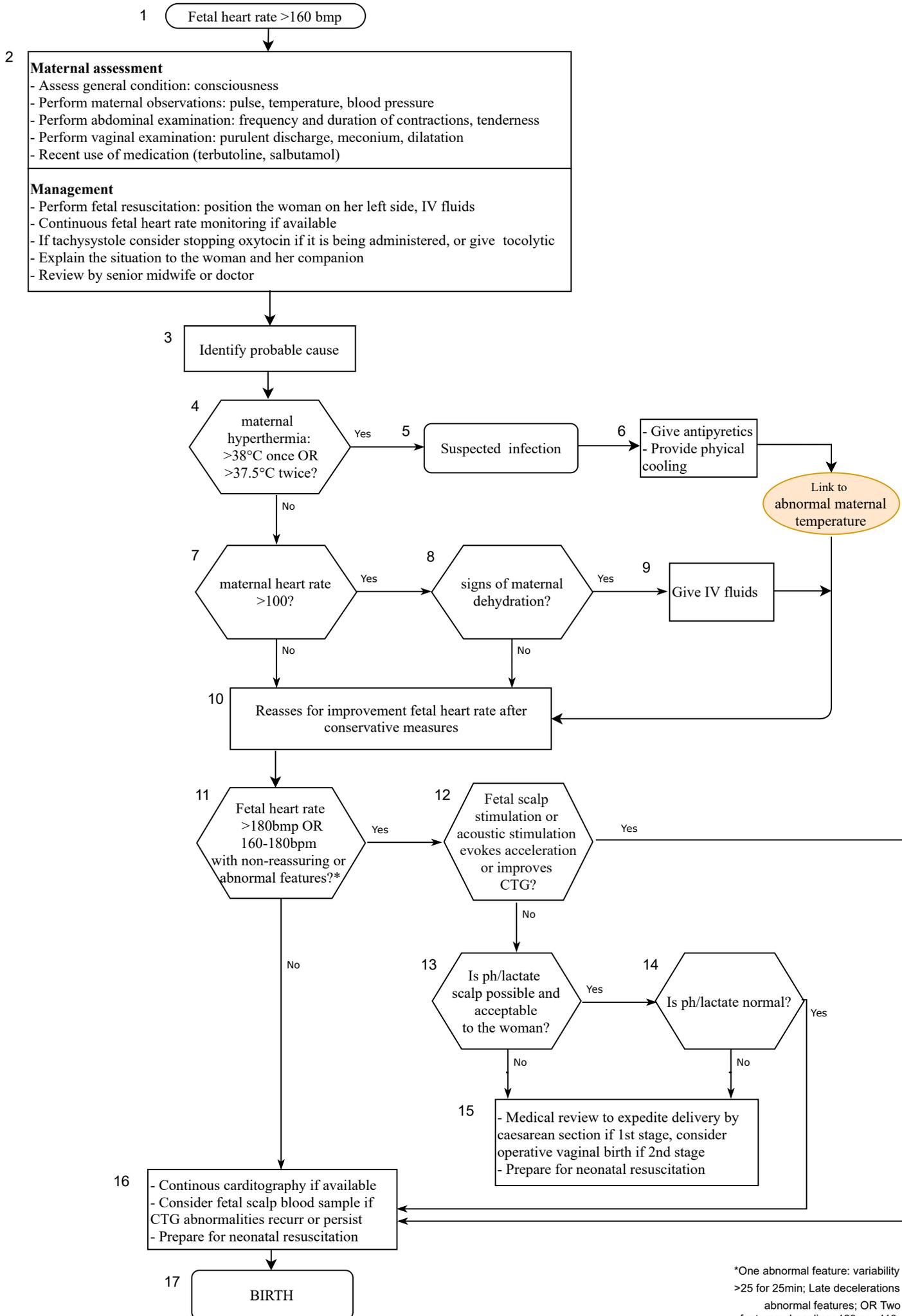
31 - Continuous cardiotocography if available, or fetal heart rate auscultation until birth every 15min in 1st stage, every 5 min in 2nd stage
 - Continue routine maternal monitoring
 - Medical review for plan of management and assessment of progress of labour

32 BIRTH





FETAL TACHYCARDIA



*One abnormal feature: variability <5 for 50min or >25 for 25min; Late decelerations or variable with abnormal features; OR Two non-reassuring features: baseline>160 or <110; variability<5 for 30min or >25 for 15min; Variable decelerations<50% contractions or <30min; late decelerations<30min

MATERNAL HYPERTENSION

**Two readings SBP \geq 140 OR DBP \geq 90 OR
single reading SBP \geq 160 OR DBP \geq 110**

<p>Maternal assessment Assess general condition: consciousness, headache, visual disturbances (scotoma, blurred vision), nausea, vomiting epigastric pain, shortness of breath Perform maternal observations: pulse, temperature, respiratory rate, urine output Maternal examination: epigastric tenderness, reflexes, lung auscultation Perform investigations: for liver function, kidney function, full blood count, urine dipstick If proteinuria present on dipstick, request PCR and MSU</p>	<p>Fetal assessments Asses FHR using auscultation or cardiotocography if available</p>
<p>Initial management Repeat maternal observations within 15 min or monitor continuously Continuous fetal heart rate monitoring if available or frequent intermittent auscultation</p>	

Identify probable cause

Any seizures?

Yes

No

Eclampsia

- Urgent medical review
- Remain with the women and explain the situation to her and her companion
- Give antihypertensive if BP \geq 160/110: labetalol (PO or IV) OR nifedipine PO OR hydralazine IV
- Give magnesium sulfate: loading dose 4 g IV over 5 to 15 minutes, followed by an infusion 1 g/hour for 24 hours after the last seizure.
- Monitor for magnesium toxicity
- Treat recurrent seizures with further dose 2-4 g IV over 5-15 min
- Limit maintenance fluids to 80ml/h
- Repeat maternal observations every 15-30 min until BP < 160/110, hourly urine output (bladder catheterization)
- Consider expediting birth and individualized plan for mode of birth

1 or more of the following:
SBP \geq 160 OR DBP \geq 110
severe headaches
visual disturbances
nausea or vomiting or epigastric pain
oliguria
pulmonary oedema
raised transaminases, creatinine,
low platelets

Yes

No

Severe pre-eclampsia

- Call for urgent medical review
- Give antihypertensive if BP \geq 160/110: labetalol (PO or IV) OR nifedipine PO OR hydralazine IV
- Give magnesium sulfate: loading dose 4 g IV over 5 to 15 minutes, followed by an infusion 1 g/hour for 24 hours.
- Monitor for magnesium toxicity
- Limit maintenance fluids to 80ml/h, if oliguria consider cautious bolus fluid
- Repeat maternal observations every 15-30 min until BP < 160/110

Proteinuria \geq 2+

Yes

No

Mild pre-eclampsia

- Medical review
- Repeat maternal observations hourly

Gestational hypertension

BP controlled
< 160/110 AND
asymptomatic?

Yes

No

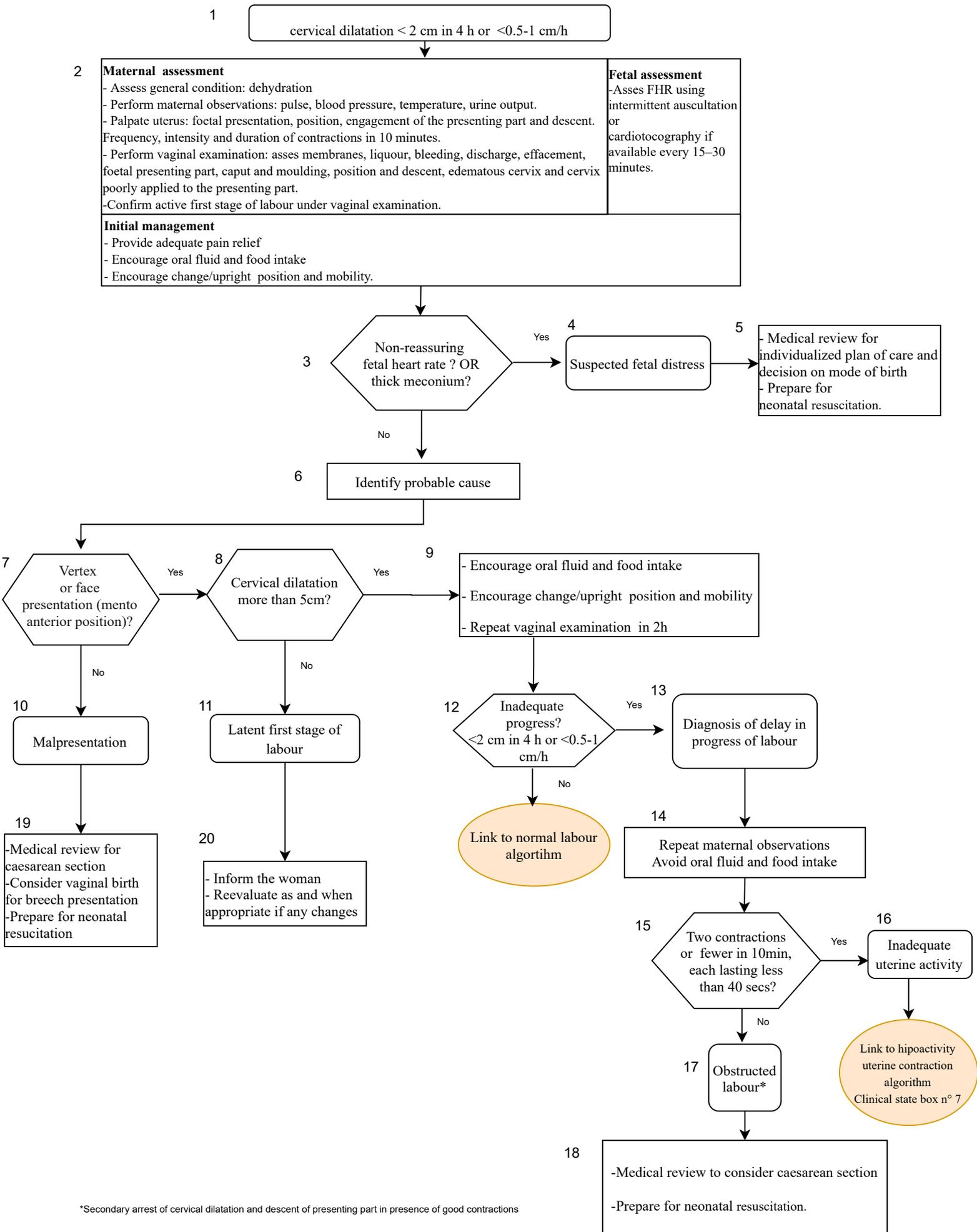
Consider expediting birth if severe pre-eclampsia or eclampsia
Individualized plan for mode of birth

Urgent medical review for individualized plan for further medication and delivery
Consider transfer to obstetric-led care, if benefits outweigh risks

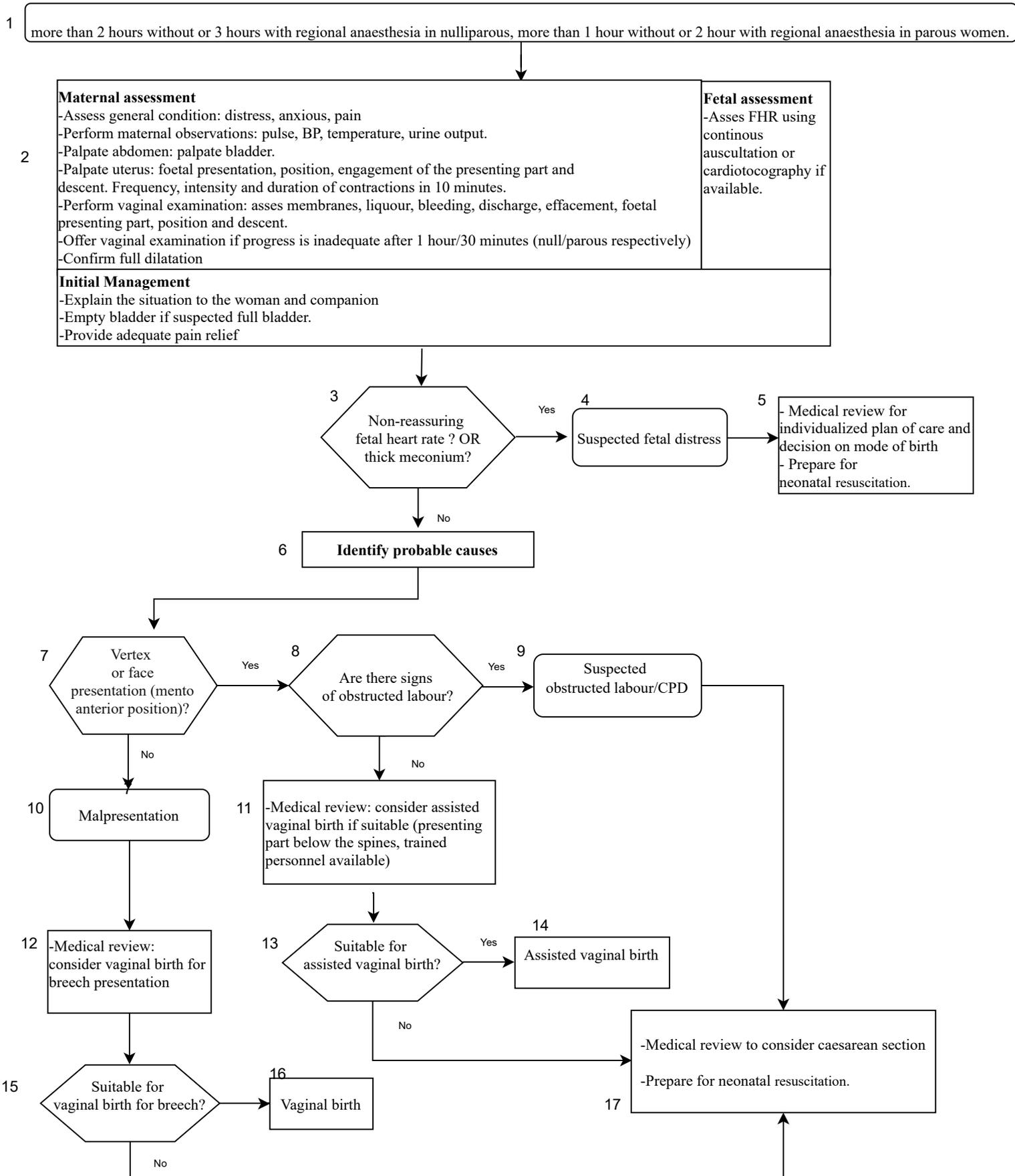
BIRTH

Regular maternal observations, frequency to be individualized based on severity, need for antihypertensive and magnesium sulphate

SUSPECTED SLOW PROGRESS OF ACTIVE FIRST STAGE OF LABOUR



SUSPECTED SLOW PROGRESS OF SECOND STAGE OF LABOUR



UTERINE HYPOACTIVITY

Two contractions or fewer in 10 minutes, each lasting less than 40 seconds

<p>Maternal assessment</p> <ul style="list-style-type: none"> - Assess general condition: constant pain - Perform maternal observations: pulse, blood pressure, urine output and haematuria - Perform abdominal examination: uterine tenderness, tonus, retraction ring, fetal size, position - Perform vaginal examination: bleeding, and if FHR abnormality or suspected slow progress assess dilatation, cervix, caput and moulding 	<p>Fetal assessments</p> <p>Asses FHR using intermittent auscultation</p>
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Is labour progress adequate in 1st stage? Yes → **Link to normal labour algorithm**

Is labour progress adequate in 2nd stage? Yes → **Link to normal labour algorithm**

Identify probable cause

- Ensure bladder is empty
- Medical review to assess cause and consider assisted vaginal delivery

Secondary arrest of cervical dilatation +/- other signs of obstructed labour?

Yes → **Suspected obstructed labour** → **Link to abnormal progress of labour algorithm**

No → Severe or constant pain +/- significant bleeding, FHR abnormality, abnormal uterine contour, loss of presenting part, fetal parts palpable in the abdomen?

Yes → **Suspected uterine rupture** → **Urgent caesarean section**
Prepare for neonatal resuscitation
Prepare for maternal resuscitation

No → **Inadequate uterine activity**

Membranes ruptured?

No → - Perform artificial rupture of membranes
- Assess colour of liquor
- Listen to FHR before and after rupture of membranes

Yes → - Continuous cardiotocography if available, or fetal heart rate auscultation
- Asses colour of liquor

Is FHR abnormal OR tick meconium?

Yes → - Medical review for individualized plan of care

No → - Start oxytocin infusion as per local protocol
- Titrate the infusion rate according to the labour pattern

3 or 4 contractions in 10 minutes each lasting 40-60sec?

Yes → **Maintain infusion rate**
Routine monitoring

Uterine tachysystole (>5 uterine contractions/10 minutes in at least two consecutive intervals)

Link to excessive uterine activity

Hypoactivity: two contractions or fewer in 10 minutes, each lasting less than 40 seconds

Increase infusion rate
Asses labour progression and uterine contractions
Asses FHR, colour of liquor

Adequate progress?

Yes → **VAGINAL BIRTH**

No → - Medical review to consider caesarean section