Fetal movements

IMPORTANT: *Consider individual clinical circumstances. Consult a pharmacopeia for complete drug information. Read the full disclaimer at www.health.qld.gov.au/qcg*

Clinical significance

Aspect	Consideration
Clinical significance	• Maternal perception of their baby's normal pattern of movements[1]: o Reassures that a baby is well[2] o Promotes maternal-baby bonding[3,4] • Investigating perceived changes in fetal movements (FM) may be an opportunity to reduce risk of stillbirth[5,6] • Perceived changed or decreased fetal movements (DFM)[7] o Sensitive non-specific indicator of fetal compromise o Associated with impaired placental function[8] • Adverse pregnancy outcomes reported after altered FM[8-11]: o Threatened preterm labour; preterm birth[12] o Fetal growth restriction (FGR); small for gestational age (SGA)[13] o Stillbirth[7] and neonatal death; congenital abnormalities[12], neonatal stroke o Feto-maternal haemorrhage • Published evidence reports mostly on decreased movement from 28 weeks gestation[14]

Fetal movements

Aspect	Consideration
Description	• May include a perception of a discrete kick, flutter, swish or roll[14] • Each woman's perception of individual FMs is different[15,16] • FM pattern may vary between pregnancies and babies (e.g. in multiple pregnancy) • Physiological significance of fetal hiccups and association with fetal well-being is unknown[17]
Normal patterns of fetal movements	• Generally, first felt in primiparous women at 18–20 weeks and in multiparous women at 16–18 weeks gestation[18] • Differentiate into a wide variety of movement types at similar points of prenatal development[19] • Maximal movements between 28 and 34 weeks gestation[20] o No reduction in third trimester but pattern of FM may change[12,14,21] • FM in healthy baby vary from 4–100 per hour[20] • Normal wake/sleep cycles[20] o Diurnal changes—peak activity in afternoon and evening from 20 weeks o Activity—sleep cycles occur day and night for 20–40 minute; rarely exceed 90 minutes in healthy fetus[14] • No definite conclusions about normal fetal movements in multiple pregnancies
Factors affecting fetal movements	• Patterns change as fetus develops o Movements become more organised (increased motor co-ordination resulting in slower more powerful gross movements)[20] • External stimuli (e.g. acoustic stimuli[22]) may increase, decrease or arrest fetal movement[20] • Movements may decrease because of[9,14,20]: o Fetal sleep cycle o FGR secondary to uteroplacental insufficiency o Fetal compromise–increased risk of adverse pregnancy outcome if woman has risk factors for stillbirth and presents with decreased DFM[9] (e.g. body mass index (BMI) > 30 kg/m^2) o Reduced amniotic fluid or polyhydramnios (rare) o Maternal use of substances (e.g. smoking, sedatives)[14]
Factors affecting maternal perception of fetal movements	• It has been reported that women may recognise only 40% of FM near term[20] • Maternal–anxiety/stress[23,24], mental distraction[25], exercise[26], medication use • Placental position[27] • Fetal–anterior position of the fetal spine (presentation has no effect on maternal perception[14]; akinesia syndromes[12])

Assessing fetal movements

Aspect	Consideration
Assessing fetal movements	• Advise woman about *'normal'* or *'usual'* FM early in pregnancy[28] o Provide written information including a list of reputable websites to women[29] • Advise woman to get to understand their baby's normal pattern of movements[15,28] • Discuss and ask about fetal movements at each antenatal visit o Focus on woman's perception about normality of the baby's activity[4] • Regular measurement and recording of fetal movements may increase maternal anxiety[14] o No evidence to support the routine use of 'kick charts'[20,21,30] o Use of personal hand-held Doppler devices is not recommended for home monitoring
Altered fetal movements	• Maternal concern about FM indicates clinical assessment is required and over-rides any low risk pregnancy status or other factors[12] (e.g. busy maternity unit) • Women presenting with concerns about a change in FM requires further investigation and management—reduced, weaker, absent, very vigorous[8]
Published literature	• Most publications and research relate to women presenting with concerns about decreased fetal movements (DFM)[12,25,31-33] • No universally agreed definition of DFM[14,34] • Awareness of less than 10 movements over two (2) hours reported as requiring review[11,35,36] • Currently no RCTs to inform management of DFM[14]
Clinical advice	• Advise woman to present for urgent assessment if any concerns between scheduled appointments[2,12,14,37] o Maternal perception of any alteration in FM are an important clinical sign o If reduced or no fetal movements after 28 weeks gestation seek urgent help • Most women will have a normal pregnancy outcome[14] • If no FM felt by 26 weeks gestation, consider referral for obstetric ultrasound scan (USS)[30] to assess growth and exclude fetal neuromuscular condition[12,18]

Decreased or changed fetal movements

Aspect	Consideration
Clinician expertise	• Assessment by an experienced/expert clinician is required • If no expert clinician available, consult with RSQ
Clinical assessment	• Perform assessment of woman and fetus as soon as possible within two hours of presentation including: o Review current pregnancy, medical and previous obstetric history o Review any previous USS for fetal growth assessment as plotted on growth charts[12] o Consider woman's risk factors for fetal compromise or stillbirth • If risk factors identified manage woman as having a high risk pregnancy[12] • Take baseline maternal observations including blood pressure (BP)[12] urinalysis and an abdominal examination o Assess fetal size including symphysis-fundal height (SFH)[12] (low quality evidence for detecting abnormal fetal growth[38]; palpate for uterine activity or tenderness and fetal movements; and identify any vaginal loss or bleeding)
Fetal heart rate assessment	• Confirm FHR by handheld Doppler or cardiotocography (CTG) to confirm fetal status o If absent FM, FHR, or fetal compromise suspected at clinical assessment urgent USS • Perform CTG to exclude fetal compromise and prompt medical review where findings are abnormal • A normal CTG with other normal clinical parameters (USS, BP, SFH) in the woman with DFM reliably assures fetal wellbeing[39] • 24–27+6 weeks gestation consider CTG monitoring according to local protocols o May be difficult to interpret and not routinely recommended[12]; may reassure the woman • 28 weeks or more gestation: o Commence CTG monitoring[12] o Monitor for a minimum of 20 minutes—if available use fetal movement recorder • 32 weeks gestation or less interpret CTG with caution
USS	• Consider referral for obstetric USS to assess biometry and fetal wellbeing, doppler studies and amniotic fluid volume measurement for undetected fetal growth restriction (FGR); and if not previously checked fetal morphology[7,25] o Individualise timing of obstetric USS based on stillbirth risk factors, clinical assessment (including CTG), gestational age, recent USS findings and service capability[11,12] • A repeat growth scan is not indicated within two weeks of a normal USS

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Feto-maternal transfusion

Aspect	Consideration
Feto-maternal transfusion assessment	• Consider testing for feto-maternal transfusion[12] by flow cytometry or Kleihauer-Betke test o Perform urgently if signs of fetal anaemia or if sudden cessation of FM o Repeat testing as clinically indicated • Feto-maternal transfusions o May cause fetal anaemia[40] o Are typically silent events[41] o May not be suspected based on CTG[42] or USS unless severe anaemia has occurred o Massive feto-maternal transfusion has been reported in up to 4.1% stillbirths[43] and 0.04% neonatal deaths[44] • Recurrent, small to moderate feto-maternal transfusion, or chronic small volume over time may lead to fetal compromise and or fetal death[12] • Associated signs of fetal anaemia may include: o CTG—reduced or absent variability[12]; unexplained fetal tachycardia; sinusoidal FHR o USS—elevated middle cerebral artery Doppler peak systolic velocity (MCA PSV)[25]; ascities or fetal hydrops • If positive maternal blood results: o Check maternal blood group and consider Rh D immunoglobulin in Rh negative woman ▪ Refer to Queensland Clinical Guideline *Rh D negative women and pregnancy*[45] o Consider advice from a healthcare specialist (e.g. obstetrician, MFM), as required

Ongoing management

Aspect	Consideration
Antenatal management and ongoing care	• If CTG and clinical investigation normal; no risk factors for stillbirth identified; it is the first presentation for DFM and there are no maternal concerns of DFM no further investigations required[12] o Plan clinical follow up within one week to ensure no further investigations required o Provide reassurance, education and continue usual antenatal care[12] • If recurrent DFM or risk factors for stillbirth, individualise management and care plan for each woman including follow-up CTG and/or USS, and discussion about obstetric intervention for birth o Consider repeat flow cytometry or Kleihauer-Betke test[12] • Women with recurrent presentation for DFM may be at increased risk of poorer perinatal outcomes[12,14]: o Consider close surveillance for women with ongoing concerns of DFM • If fetal anaemia identified or suspected refer to materno-fetal medicine (MFM) specialist for ongoing management
Fetal movement awareness[6,7,46,47]	• There is a strong relationship between fetal movement changes and pregnancy outcomes, including stillbirth[7,48] • Raising awareness of fetal movements may have beneficial impacts on outcomes[7,48] • The most beneficial way to communicate and raise awareness about FM amongst pregnant women and clinicians is unclear[49] • Various studies with demonstrated positive outcomes for the woman, and baby, have included the following approach for raising awareness: o Mobile phone applications[7] o Leaflet distribution at antenatal appointments[46] o Side lying for 15 minutes each day, when the fetus is awake, and monitoring the character, strength and frequency of the movements[46] o Clinician education[48] o Social media (news and popular women's websites)[47]
Birth planning and considerations	• Informed decision making on the benefits and risks of planned birth, when clinically indicated, with emphasis on delaying birth until greater than 39+0 weeks (where possible)[12] • Plan obstetric intervention for birth based on usual indicators including evidence of fetal compromise (fetal distress on CTG, FGR, fetal anaemia on USS) and gestational age o Individualise care with each woman dependent on clinical presentation o Consider ongoing fetal monitoring (e.g. CTG and obstetric USS if less than 37+0 weeks) o Consider consultation with a MFM specialist, if less than 37+0 weeks gestation • If induction of labour is indicated refer to Queensland Clinical Guideline *Induction of labour*[51] • If fetal death—refer to Queensland Clinical Guideline *Stillbirth care*[50]

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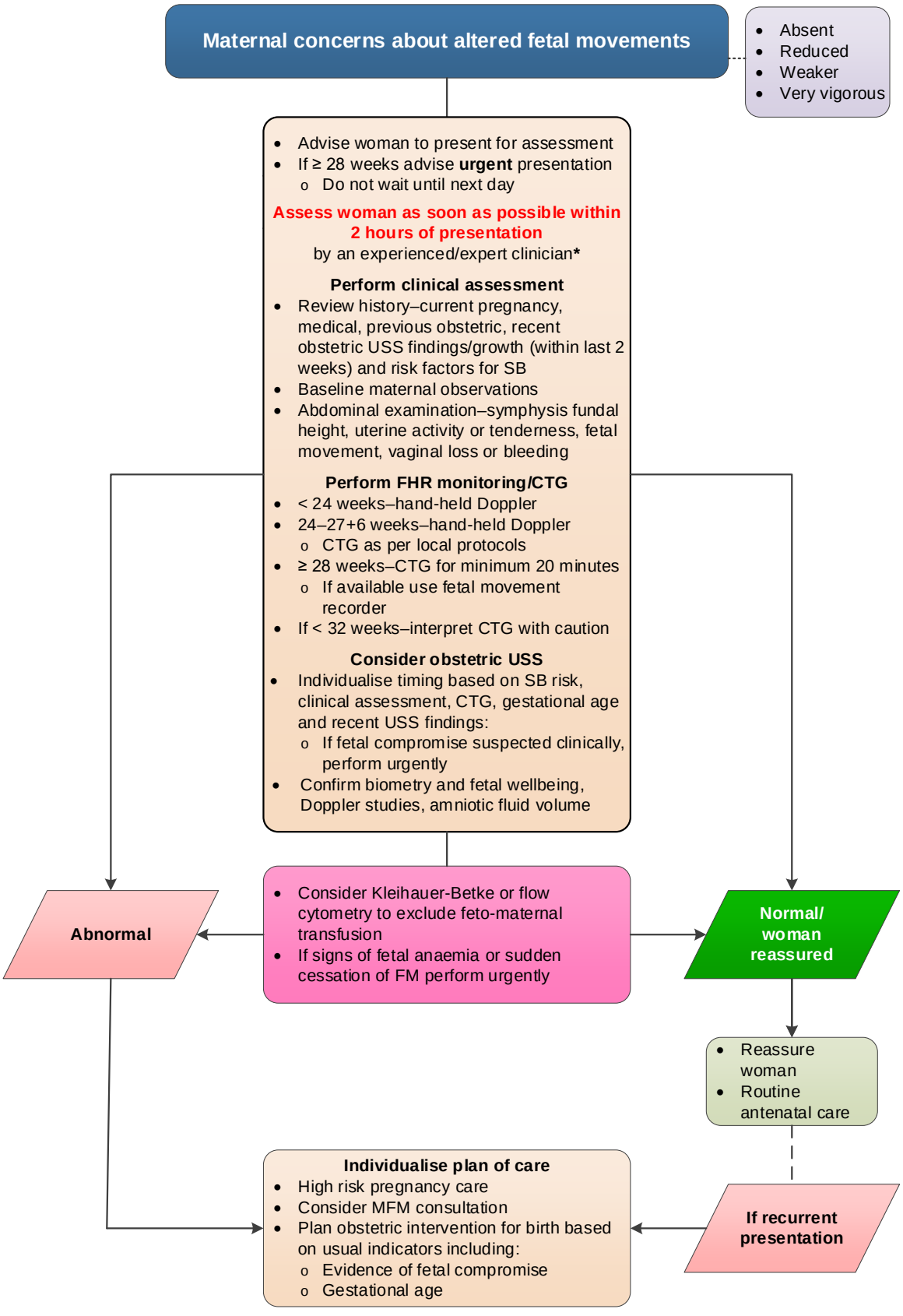
Flowchart: Altered fetal movements



Flowchart: F23.46-1-V4-R28

CTG: cardiotocograph; **FHR:** fetal heart rate; **FM:** fetal movements; **MFM:** maternal fetal medicine; **SB:** stillbirth; **USS:** ultrasound scan; **≥:** greater than or equal to; **<:** less than, ***experienced/expert clinician:** clinician with knowledge and experience in the assessment and management of altered fetal movements

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