Clinical Practice Guideline for the Care of Women with Decreased Fetal Movements

Developed in partnership with:

Endorsed by:

10 August 2017

Produced by:

This clinical guideline was produced by a multidisciplinary working group led by the Mater Research Institute, The University of Queensland, Brisbane, Australia, under the auspices of the Stillbirth and Neonatal Death Alliance (SANDA) of the Perinatal Society of Australia and New Zealand (PSANZ) in partnership with the Centre of Research Excellence in Stillbirth and the Stillbirth Foundation Australia. Support for guideline development was received from the Mater Foundation, Brisbane.

Endorsed by:

The clinical guideline has been endorsed by: Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG); Australian College of Midwives (ACM); Stillbirth Foundation Australia; Australian National Council for Stillbirth and Neonatal Death Support (SANDS); Red Nose; Women's Healthcare Australasia; and Still Aware.

Glossary of terms

Acidaemia	**Increased acidity of the blood caused by an increased concentration of hydrogen ions and measured by pH.**
Amniotic fluid	**The fluid that surrounds the fetus within the amniotic sac.**
Antenatal	**The period of the pregnancy before birth**
Antepartum	**Before the onset of labour.**
Apgar score	**A system to assess the status of the baby after birth. The Apgar score is recorded at 1 minute and 5 minutes after birth and is based on the following five variables: heart rate, respiratory effort, muscle tone, reflex irritability and colour, with a maximum score of 10.**
Body mass index (BMI)	**A person's weight in kilograms divided by the square of height in meters.**
Cardiotocography (CTG)	**The electronic monitoring of the fetal heart rate (cardio) and of uterine contractions (toco). The fetal heart rate is recorded by means of either an external ultrasonic abdominal transducer or a fetal scalp electrode. Uterine contractions are recorded by means of an**

Flow cytometry	**A test used to detect FMH by differentiating fetal and maternal blood cells.**
Gestation	**The time from conception to birth. The duration of gestation is measured from the first day of the last n ge so**

1. Purpose of this guideline

Stillbirth affects over 2,500 families in Australia and New Zealand[1, 2], and over 2.64 million families worldwide annually[3]. Stillbirths are often preceded by maternal perception of decreased fetal movement (DFM)[4, 5]. DFM is also strongly linked to adverse perinatal outcomes such as neurodevelopmental disability, infection, fetal to maternal haemorrhage (FMH), emergency delivery, umbilical cord complications, small for gestational age (SGA) and fetal growth restriction (FGR)[6, 7]. Decreased fetal movements for some women may be associated with placental dysfunction, which

2. Summary of clinical practice recommendations and care pathway

2.1 Recommendations for fetal movement monitoring

Recommendations	Evidence level and references*	Recommendation grade*
Recommendation 1		
a. All pregnant women should be routinely provided with verbal and written information regarding normal fetal movements during the antenatal period. This information should include a description of the changing patterns of movement as the fetus develops and normal wake/sleep cycles. **b. Clinicians should emphasise the importance of maternal awareness of fetal movements at each clinical visit.**	**III-3** 9, 13	**C** **√**
Recommendation 2		
Women with a concern about decreased fetal movements should be advised to contact their health care provider immediately.	**III-3** 4, 6, 13	**C**
Recommendation 3		
a. Maternal concern of DFM overrides any definition of DFM based on numbers of fetal movements. **b. The use of kick-charts is not currently recommended as part of routine antenatal care.**	**III-3** 3, 6, 13, 14 **I** 15	**√** **B**

Recommendations	

2.4

3.

prospective, population-based study in Norway reported a fetal death rate in women who had a live fetus at time of presentation with DFM was 8.2 per 1000, compared to 2.9 per 1000 in the general population[50].

3.2 Perinatal mortality in Australia and New Zealand

Stillbirth affects over 2,500 families per year across Australia and New Zealand[1, 2]. One baby is stillborn for every 142 births across Australia[64]. Fetal death rates have failed to show any significant reduction for more than a decade[65], while the decline in perinatal and neonatal mortality rates in high income countries is largely attributed to advances in neonatal care[66].

Both Australia and New Zealand report fetal deaths from 20 weeks (or weight of ≥ 400 grams if gestation unknown), and neonatal deaths up to 28 days after birth. In Australia, this is reported as a *perinatal mortality rate* **and in New Zealand it is reported as a** *perinatal related mortality rate***.**

Based on 2014 data from the National Perinatal Statistics Unit in Australia, there were 312,548 births and 2,986 perinatal deaths in Australia, giving a perinatal mortality rate (PMR) of 9.6 per 1000 births[64]. Perinatal mortality comprised 2,200 stillbirths and 786 neonatal deaths, giving a stillbirth rate of 7 per 1000 births and a neonatal death rate of 3 per 1000 births[64]. The PMR of babies born to Aboriginal or Torres Strait Islander mothers was higher than that of babies born to non-Indigenous mothers (14 versus 9 per 1000 births)[2].

In New Zealand in 2014, there were 58,647 births and 656 perinatal deaths, giving a perinatal

considered an important part of routine antenatal care, the definition of alarm limits, the level of clinical assessment and the follow-up of women presenting with DFM varied widely.

These findings are consistent with other similar surveys from the UK[77] and Norway[50]. Variation in clinical practice was also confirmed in another Australian study[28]. In this clinical audit of practice across six public hospitals in Queensland, 6-8% of pregnant women reported concern about DFM. Whilst the majority of these women were investigated by CTG, the use of ultrasound scan in the initial assessment of these women varied widely amongst clinicians.

Contributing factors relating to suboptimal care account for 30-50% of stillbirths and neonatal deaths[68, 78, 79]. A number of studies in Norway identified that an inappropriate response to maternal perception of DFM was a common factor contributing to stillbirths[78-80]. Prolonged DFM (>24 hours) as well as sudden loss of fetal movements was shown in 47%-64% of all stillbirths[80, 81]. Stillbirths which are preceded by a decrease in fetal activity form an important group on which to focus future research and prevention strategies towards reducing stillbirth rates.

3.4 Investigations of DFM prior to 28 weeks

limit adopted by the American Academy of Paediatrics and the American College of Obstetricians

preference. The review authors concluded that there was not enough evidence to recommend or not recommend formal fetal movement counting for all women or for women at increased risk of adverse pregnancy outcomes, and recommended further research in this area.

The large trial by Grant et al[90] contributing largely to the Cochrane Review findings, however, deserves closer review. This multicentre cluster randomised controlled trial was conducted to investigate the role of fetal movement counting in 68,654 women of at least 28 weeks gestation. When compared to women receiving standard antenatal care (including an informal query about fetal movements during antenatal clinic visits), this study found no significant reduction in the

6. Which investigations should be undertaken for DFM?

6.1 Fetal heart rate monitoring

not be associated with fetal compromise. For example, a "flat" FHR pattern showing reduced variability (<5bpm) may be present during the sleep cycle of a healthy fetus but is more likely to be associated with fetal compromise if it lasts for >90 minutes[100-102]. If fetal compromise is suspected on CTG, an urgent medical review should be sought.

Although CTG has become part of clinical practice, a Cochrane review[103] comprising 4 trials and 1588 women did not confirm or refute any benefits for routine antepartum CTG monitoring of "at-risk" pregnancies. However, the authors acknowledge several limitations of this review, including the small numbers of women studied, methodological concerns, and also the fact that these trials were conducted in the early 1980s when these tests were first introduced into clinical practice. However, a 2011 retrospective, population-based cohort study of women presenting with maternal perception of DFM during the third trimester found that the CTG was a reliable screening indicator of fetal wellbeing, and that abnormal pregnancy outcomes were more common when the initial CTG was abnormal or persistently non-reassuring[104].

Recent non-randomised studies have reported benefits of screening low- and at-risk pregnancies using CTG monitoring for the indication of DFM. For example, in a Norwegian study of 3014 women reporting DFM, a CTG was performed in 97.5% of cases and an abnormal result was detected in 3.2%[105]

to DFM. A prospective cohort study of 305 women reporting DFM found that of the 67 pregnancies with poor perinatal outcomes, 4 were identified by CTG, 20 by ultrasound assessment of fetal growth, amniotic fluid volume and umbilical artery Doppler, and a further 24 were identified by low hPL level in the absence of any other abnormality[43].

In a prospective cohort study of 3014 women with DFM[105], detection of an abnormality using

clinically relevant volume of haemorrhage, as the rate of blood loss, chronicity of the bleed and

8. Discussion: Implementation and future research

Leading international authorities have recommended that women experiencing DFM should notify their health care providers as soon as reasonably possible. However, beyond this recommendation, there is limited guidance for clinicians on how to manage this presentation, resulting in much variation amongst clinicians with regards to appropriate clinical management. Cochrane reviews related to fetal movement counting and management of reported decreased fetal movements recommend further research in this area[15, 119]. This guideline was developed to promote clinical practice which is based on the best available international evidence, thereby improving information and counselling offered to women during the antenatal period and reducing variation in clinical practice in Australia and New Zealand.

The recommendations of this guideline cover two key areas: 1) information for pregnant women about what constitutes normal fetal movements and advice about reporting concerns of a reduction in fetal movements to a health care provider; and 2) information for clinicians with regards to the management and investigation of women reporting DFM. In the absence of robust research in this area, the thirteen key recommendations are largely based on consensus after careful consideration of the available evidence.

Improving the consistency and standard of information provided to pregnant women on fetal movements and on the significance of reporting decreased fetal movements is likely to reduce anxiety associated with DFM and, more importantly, may lead to timely intervention and a reduction in stillbirths. The findings of a Norwegian study[13] are encouraging in their demonstration of a reduction in the stillbirth rate by one-third following the implementation of a guideline and the provision of information about fetal movements to pregnant women.

The working party emphasises the importance of well-designed studies in order to develop and test appropriate screening tools which identify "at-risk" pregnancies on the basis of fetal movement. Further high-quality randomised controlled trials are needed to determine appropriate intervention strategies for women with DFM. Other outcomes which should be examined in future trials include maternal anxiety and morbidity, health care utilisation and costs. Trials should be adequately powered to examine the effect on perinatal mortality and major neonatal morbidity. Support for such research has been indicated by a recent survey of Obstetricians and Gynaecologists in Australia and New Zealand[10].

9. References

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81.

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Appendix B. Methods for guideline development

In 2010, the Australian and New Zealand arm of the international Fetal Movement Intervention and Assessment (FEMINA) collaboration developed this clinical practice guideline with a working party of clinicians and health service researchers. The process was coordinated by the Mater Mothers' Research Centre (MMRC), Mater Health Services, South Brisbane.

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Appendix D. Level of evidence & grading of recommendations

The relevant papers were identified and classified according to level of evidence. Evidence based recommendations were prepared and graded on the strength of the evidence. This classification of the evidence and grading of the recommendations was based, as stated below, on criteria advocated by the National Health and Medical Research Committee[11].

Levels of Evidence

Level	Description
Level I	Evidence obtained from a systematic review of all relevant randomised

Appendix E. Guideline working party

These updated clinical guidelines have been compiled by the following clinicians, health researchers and representatives from collaborating organizations:

Name	Role and/or affiliation
Ms Victoria Bowring*	General Manager, Stillbirth Foundation Australia
Dr Wendy Burton	Chair, Mater Mothers' Hospital Alignment; Maternity Lead, Brisbane South Primary Health Network; General Practitioner, Brisbane, Australia
Dr Yogesh Chadha	Senior Staff Specialist, Royal Brisbane and Women's Hospital; Brisbane, Australia
Ms Lisa Daly*	PhD Candidate, NHMRC Centre of Research Excellence in Stillbirth, Mater

Appendix G. Stakeholder consultation

Once the working party had achieved consensus around recommendations, consultation was