

Professional and patient perspectives of NICE guidelines to abandon maternal monitoring of fetal movements

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SUMMARY

Over the past 30 years, fetal movement counts have been recommended to women in the second half of pregnancy as a way of monitoring fetal wellbeing and providing an early warning of fetal distress. However, guidance from the National Institute of Clinical Excellence (NICE) recommends abandoning this. Evidence is reviewed to show that the chance of preventing physical damage to the fetus is indeed low. The activity of monitoring movements has been favoured by the majority of women. The new NICE guidance is useful to clarify professional understanding of the limitation of counting fetal movements, but women who notice decreased movements will still need referral for human factors.

Keywords: fetal movement; maternal welfare; perinatal care.

Introduction

IN October 2003 the National Institute for Clinical Excellence (NICE) and the National Collaborating Centre for Women's and Children's Health published a guideline for the National Health Service (NHS) in England and Wales on the routine care of healthy pregnant women.¹ In the press release, Andrea Sutcliffe, an executive director at NICE said:

*'This guideline is based on the best available evidence and has been developed following a collaborative and consultative approach involving health professionals and service users. In addition, the information for the public will support health professionals in providing consistent, quality information for women.'*²

The guideline itself is indeed an authoritative document, spanning 304 pages and including 631 references. With such an in-depth consideration of the evidence, which has become the hallmark of NICE, and the collaboration with expert bodies — including the Royal College of Obstetricians and Gynaecologists, the Faculty of Family Planning and Reproductive Health Care, the Royal College of Paediatrics and Child Health, the Association for Genito-Urinary Medicine, Medical Society for the Study of Venereal Diseases, and the Royal College of Midwives — surely the guidance will be accepted and implemented across the NHS. In particular, the community midwives and general practitioners (GPs) who carry out most of the antenatal care for pregnant women would be happy to accept such guidance without further ado, but however well researched guidelines are, they are not always implemented.³

At the time of publication, there was a curious local dilemma for my practice that highlighted the much larger issue of why such guidance will inevitably be implemented only partially, with some recommendations not implemented at all. The significance of decreased fetal movements is accepted by only one of our two local hospitals. One advocates 'kick charts', the other has no need for them. So how should midwives and GPs respond to a woman who presents having noticed a reduction in fetal movements? Arranging immediate transfer to the maternity unit for cardiotocography would be normal for one hospital and not for the other, but clearly the decision should rest on the clinical assessment of the patients, that is, mother and fetus, and not on where the delivery is planned to take place. The new guidance from NICE makes a clear recommendation based on the strongest category of evidence (Box 1).

Given this recommendation, health professionals and pregnant women should abandon any formal monitoring of

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Submitted: 2 February 2004; Editor's response: 26 March 2004; final acceptance: 3 June 2004.

©British Journal of General Practice, 2004, 54, 858-861.

HOW THIS FITS IN*What do we know?*

It is known that a reduction in fetal movements is associated with serious intrauterine and postpartum problems, but asking women to count movements in the second half of pregnancy is unlikely to prevent physical harm to the fetus.

What does this paper add?

Reported psychological benefits of fetal-movement counts include supporting the pregnant woman's mental health and bonding to the unborn child. Women who notice decreased movements over 12 hours should still be referred to hospital.



fetal movements as a screening process, but the issue is less black and white than it first seems. The question faced by all professionals in antenatal care is when to accept that fetal movements have been reduced for long enough to warrant intervention. No-one has suggested that reduced fetal movements over 1 hour gives any concern, but all would agree that no movements felt at all over several days would be a serious symptom. Abandoning routine fetal-movement counting will not stop women noticing when their baby seems unusually quiet; those in the front line, then, need to know when a reduction in movements really matters, and what to do about it.

Method

Searches were done using the medical subject headings (MeSH) term 'fetal movements' in MEDLINE, EMBASE, and the Cochrane Central Register of Controlled Trials, as well as manually searching local medical libraries for information in standard textbooks and protocols. The latest review found was by Christensen and Rayburn from 1999.⁶ There is no review specifically on maternal fetal monitoring in the Cochrane Database of Systematic Reviews, but there is one relevant review about the usefulness of cardiotocography.⁷

The main criterion used for selecting which papers to quote here was that each paper should contribute experimental evidence, weighing the balance of benefits against the risks of asking mothers to monitor fetal movements. Although studies that used robust design features, such as randomisation and control groups, were more persuasive than those that did not, it was important not to limit the search only to those that made use of such methods because the downside to monitoring fetal movements might only be found by qualitative studies, which need to take a different approach. Weaknesses in a study that has been included in this review are referred to in the text.

Discussion*How effective is the monitoring of fetal movements in preventing fetal complications?*

For many years pregnant women have been advised to note fetal movements in the third trimester as part of routine antenatal care.⁸ It was first recommended in 1973 as a non-

There is often no obvious cause of late fetal death of normally formed singleton births. Many of these deaths are unpredictable and occur in women who are healthy and who have had otherwise uncomplicated pregnancies.

Maternal recognition of decreased fetal movement has long been used during antenatal care in an attempt to identify the jeopardised fetus and intervene to prevent death. Given the low prevalence of fetal compromise and an estimated specificity of 90% to 95%, the positive predictive value of the maternal perception of reduced fetal movements for fetal compromise is low, 2% to 7%.⁴

One RCT (randomised controlled trial) was found that assessed the ability of the 'count to 10' method to reduce the prevalence of antenatal fetal death.⁵ [Evidence level 1b] The method records on a chart the time interval each day required to feel 10 fetal movements. This cluster RCT randomised 68 000 women to either routine formal fetal-movement counting or to standard care. It found that there was no decrease in perinatal mortality in the test group and this policy would have to be used by about 1250 women to prevent one unexplained death.

Following a reduction in fetal movements women should be advised to contact their midwife or hospital for further assessment.

The evidence does not support the routine use of formal fetal movement counting to prevent late fetal death.

Recommendation

Routine formal fetal-movement counting should not be offered. [A]

Box 1. Routine monitoring of fetal movements.¹

specific early warning sign of fetal distress.⁹ Since then, reduced fetal movements have been linked to both intrauterine and postpartum pathology.^{10,11}

Estimates of the proportion of ultrasound detected fetal movements noticed by the mother are around 80%.^{12,13} One study also showed that a decrease in fetal activity preceded changes in fetal cardiac rhythm by 12–96 hours.¹² In this study, the positive predictive value of counting fetal movements by the mother in the detection of fetal distress was estimated to be 64–78%.

In 1987, Valentin and Marsal asked 1914 women to count fetal movements throughout the third trimester of pregnancy.¹⁴ Of these, 158 consulted the delivery ward staff about decreased activity. Babies with congenital malformations ($P = 0.001$) and small-for-gestational age babies ($P = 0.040$) were significantly more common among consulters than non-consulters. Although the study authors concluded that 'women who report decreased fetal movements constitute a risk group and should be carefully monitored,' their data gave no support to suggest that had such monitoring been done, there would have been any fewer fetal abnormalities.

In 1991, Whitty *et al* demonstrated that initial assessment of women reporting decreased activity using a nonstress test and ultrasound examination was sufficient to detect all cases where further intervention was required.¹⁵ Of 292 women who reported decreased activity, five had already had an intrauterine death, 13 were brought to immediate delivery and 17 had abnormal fetal heart rate tracings that necessitated follow-up.

A more recent study in 1998¹⁶ showed no difference in outcome between normal pregnancies and those where

fetal movements had been reduced. Over a 20-month period, 435 patients were seen in the fetal assessment unit of an inner-London teaching hospital. The risks of a low 5-minute Apgar score, admission to the special care baby unit, preterm delivery, or caesarean section for fetal compromise was no higher in mothers who had reported reduced fetal movements than in those who had not.

Even where there is a complete cessation of movements, the outcome is not necessarily bad. Biale and Mazor described five such cases in 1985,¹⁷ all of which resulted in the birth of normal infants.

The paper by Grant *et al*,⁵ cited by NICE in their guideline, estimated that formal counting of fetal movements by 1250 women prevents, at best, one unexplained antepartum late fetal death and may be just as likely to cause an adverse event.

The range of results from these studies is not surprising given that recording fetal movements is a subjective measurement and one that is affected by confounding factors. In 1979, Wood *et al* studied 137 women who monitored fetal movements.¹⁸ The group was not typical of the general population, but were being specially monitored as 113 had obstetric complications. Low fetal movement counts were associated with maternal cigarette smoking and prolongation of pregnancy. High counts were associated with maternal ingestion of sedatives or tranquillisers, abnormal fetal heart rate in labour and a true knot in the umbilical cord. The absence of fetal movement during four consecutive 20-minute counting sessions was not associated with poor fetal outcome. Maternal anxiety does not seem to affect fetal movements.¹⁹

When does a reduction in fetal movements become significant?

Kick charts are a standard way for fetal movement rates to be recorded.^{20,21} Less than 10 movements in 12 hours as an indication for further investigation is based on a protocol called the Cardiff method.⁵ It is not the only method — others include those outlined by Kindt *et al*,²² and Lehman and Estok,²³ — but the advantage of simplicity and convenience with socially acceptable hours, which makes it the most popular with mothers.²⁴ No distinction is made between complete cessation of movements and a reduction in frequency. This is the method used in many studies.²⁵⁻²⁸

Shortening the time at which a reduction is considered important will increase the sensitivity of the monitoring at the expense of its specificity. One study in 1989²⁹ showed a considerable decrease in perinatal mortality associated with a monitoring programme that set the time limit before medical advice should be sought to only 2 hours. The logistics of responding to such a short time limit are difficult but not impossible. The real issue is whether decreasing the specificity, giving rise to more false alarms and unnecessary anxiety, is worth the gains. During the study period, the number of antepartum tests performed increased by 13%, and interventions for fetal compromise prompted by inadequate fetal activity tripled.

Is there an effective response to reduced fetal movements?

Cardiotocography would normally be included in an assessment of a woman referred to a maternity unit

because of a reduction in perceived fetal movement, but surprisingly little evidence exists to support this form of further assessment. The 2003 Cochrane review by Pattison and McCowan⁷ only includes four studies, all in high or intermediate risk pregnancies, dating between 1982 and 1985. No significant effect on perinatal mortality or morbidity was found.

Better assessment may depend on more modern techniques such as Doppler velocimetry,³⁰ or vibroacoustic testing.^{32,33} In a brief communication in 2001, Berbey *et al*³³ reported a statistically significant association between decreased fetal movements and several other prenatal or postnatal assessments of fetal wellbeing including Apgar score, but details of the study were sparsely reported and no attempt was made to link the data to outcomes of pregnancy.

A review of all methods of fetal movement monitoring, maternal and technical, by Velazquez and Rayburn in 2002³⁴ concluded that decreased movements noticed by the mother require reassessment by more technical tests of fetal wellbeing. There was insufficient evidence that maternal monitoring provides effective surveillance independently.

Is self-monitoring harmful?

Despite many publications generally being in support of fetal monitoring, it has not been unanimously accepted. There have been concerns over the extra testing and the risks associated with any intervention, some of which would inevitably turn out to have been unnecessary.³⁵ There have also been fears that the burden of responsibility it placed on mothers might cause anxiety, although this was unfounded. Eggertsen and Benedetti studied 394 pregnancies followed by family physicians. Counting was well accepted, with 85% of women finding it reassuring and 91% wanting to include it in subsequent pregnancies.³⁶ Although this refutes the suggestion that counting might cause anxiety, the level of support might have been very much less had the women appreciated that it was unlikely to protect the fetus.

In 1994, a prospective, controlled trial of 613 healthy pregnant women was conducted to determine whether fetal movement counting induced anxiety or other deleterious psychological effects in low-risk primigravidae.³⁷ No significant changes in psychological status occurred as a result of self-monitoring. It was interesting to note that independent of monitoring, all women showed changes in their psychological profile from 28–37 weeks. Positive attitudes towards the infant increased slightly, confirming an earlier finding by Mikhail *et al* in 1991,³⁸ and feelings of wellbeing decreased slightly for all women. Perhaps this was what had prompted the original concern by professionals who observed women's attitudes changing later in pregnancy; without a control group it would be easy to attribute such changes to the fetal monitoring going on over the same period.

Balancing the divided opinion

Over the years, fetal monitoring by mothers has had its champions, such as Sadovsky,^{8,26} but also its sceptics, such as Marsh.³⁹

Expectant mothers take note of fetal movements because it gives them a sense of wellbeing and control, but the impact

on preventing avoidable injury to the fetus is slight. The majority of pregnancies in which a decrease in movements has been noted will turn out to be normal; in some cases the fetus has already suffered irreversible injury before medical intervention can help. It is only the occasional pregnancy that falls between these two groups that can be helped by earlier diagnosis resulting from fetal movement monitoring. The number needed to treat has been estimated to be as high as 1250. The number needed to harm is so far undefined. It would need to be estimated from a very large sample within which the critical factor would be the number of pregnancies harmed by an unnecessary intervention that was undertaken because of concerns raised by decreased fetal movements. The likelihood is that there would be none or very few such pregnancies because major interventions usually depend on other events.

Conclusion

Health professionals should no longer recommend the routine counting of fetal movements, but pregnant women should continue to be aware of fetal movements in the second half of their pregnancy. If a decrease in movements that continues for more than 12 hours is noted, further assessment in hospital would help to reassure the mother and to avoid damaging the professional-patient relationship by delaying diagnosis in the case of an intrauterine death. If the period is less than 12 hours, it would be reasonable to be guided primarily by the woman's view as to whether she would find further assessment reassuring or not. What the NICE guideline does is to reinforce knowledge of the limitation of fetal movement monitoring. This allows the decision of whether or not to refer to be more patient-centred, and will avoid professionals relying on the kick chart and being lulled into a false sense of security when all seems well.

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