

## **Health and Social care Committee**

### **Inquiry into stillbirths in Wales**

#### **SB 4 – Dr Alexander Heazell**

#### **Written Evidence For The National Assembly For Wales's Health And Social Care Committee One-Day Inquiry Into Still Births In Wales**

*Dr Alexander Heazell MBChB(Hons) PhD MRCOG, Clinical Lecturer in Obstetrics, University of Manchester, UK.*

This submission is intended to provide written evidence to the inquiry regarding the awareness, implementation and effectiveness of current guidance and recommendations with regard to stillbirth prevention, especially in relation to reduced fetal movements.

In Wales, approximately 1 in 200 babies born after 24 weeks of pregnancy are stillborn; accounting for 180 births in the country per year. In common with the UK, this rate has not significantly decreased for 20 years. When the Welsh stillbirth rate is compared, with similar-sized European countries, it is higher than Estonia, Finland, Slovakia, Denmark and Norway.

One of my research interests is the potential use of reduced fetal movements to identify babies at increased risk of stillbirth. The use of maternal perception of fetal activity to identify babies at risk of stillbirth is not a new concept; it has been of interest since the 1970s when various studies, including those from Cardiff, found a link between a reduction in fetal movements and subsequent stillbirth.<sup>1</sup>

There have been three significant barriers to progress in managing reduced fetal movements. Firstly, due to the large variation in fetal movements between different women and different pregnancies it has not been possible to come to a useful definition of reduced fetal movements. No definition of reduced fetal movements has ever performed better than a mother's own concern of reduced fetal movement. Our 2008 survey of obstetricians' and midwives' knowledge and views regarding reduced fetal movement found that there was significant variation in what clinicians defined as reduced fetal movements, with up to 19% of respondents unsure of what constituted reduced fetal movements.<sup>2</sup>

Importantly, many studies have now found that a reduction in fetal movements, irrespective of the definition, is related to an increased risk of subsequent stillbirth and fetal growth restriction.<sup>3</sup> Our recent studies suggest that maternal perception of reduced fetal movements is associated with a 2-3 times increased risk of stillbirth and fetal growth restriction.<sup>4,5</sup>

Secondly, the relationship between a mothers' perception of reduced fetal movements and underlying cause has not been fully understood. It is thought that for some infants, a reduction in movements constitutes a response to a problem with nutrient or oxygen delivery from the placenta (afterbirth).<sup>6</sup> This is consistent with the link between stillbirth and fetal growth restriction. One study showed a close link between the amount of fetal movements the day before birth and the levels of oxygen in umbilical cord blood.<sup>7</sup> We have recently shown abnormalities in placental size, shape, microscopic appearance and function in women who attend with reduced fetal movements.<sup>8</sup> This evidence suggests that for some women reduced fetal movements is an important indication of fetal compromise.

Lastly, there is uncertainty about which investigations should be carried out after a mother attends a maternity unit with reduced fetal movements. We found that practice varied widely

throughout the UK, with almost all respondents performing a fetal heart rate trace, but only 20% carrying out an ultrasound scan for fetal growth, liquor volume (the amount of water around the baby which indicates placental function).<sup>2</sup> A quality improvement programme in Norway, found that encouraging women to attend for reduced fetal movements, and performing a fetal heart rate trace followed by an ultrasound scan to assess fetal growth, liquor volume and blood flow through the placenta was associated with a significant reduction in stillbirths.<sup>9 10</sup> We have recently confirmed in 303 women with reduced movements that the most useful investigations to predict poor pregnancy outcome are a fetal heart rate trace, ultrasound measurement of growth and liquor volume and potentially a new marker of placental function.<sup>5</sup>

Recognising and acting appropriately on reduced fetal movements has been highlighted as a potential way of reducing stillbirths. A confidential enquiry into antepartum stillbirths found that 45% had suboptimal care; the two most frequent problems identified were in the recognition and management of fetal growth restriction and reduced fetal movements.<sup>11</sup>

The challenges in the definition and management of reduced fetal movements were recognised by the British Maternal and Fetal Medicine Society who recommended to the Royal College of Obstetricians and Gynaecologists that a national guideline be produced. This was produced, peer-reviewed and published in 2011.<sup>12</sup> We are currently conducting a national survey to determine whether this national guideline has influenced local practice.

In summary, there are national guidelines that can inform UK practice in the management of RFM. Recent evidence from other European countries suggests that if all women with reduced fetal movements had fetal wellbeing confirmed by a fetal heart rate trace and ultrasound assessment of fetal growth and liquor volume, this may identify babies at greatest risk of stillbirth who can then be safely delivered.

## References

1. Pearson JF, Weaver JB. Fetal activity and fetal wellbeing: an evaluation. *Br Med J* 1976;1(6021):1305-7.
2. Heazell AE, Green M, Wright C, Flenady V, Froen JF. Midwives' and obstetricians' knowledge and management of women presenting with decreased fetal movements. *Acta Obstet Gynecol Scand* 2008;87(3):331-9.
3. Heazell AE, Froen JF. Methods of fetal movement counting and the detection of fetal compromise. *J Obstet Gynaecol* 2008;28(2):147-54.
4. O'Sullivan O, Stephen G, Martindale EA, Heazell AE. Predicting Poor Perinatal Outcome in Women who Present with Decreased Fetal Movements - A Preliminary Study. *Journal of Obstetrics and Gynaecology* 2009;29(8):705-710.
5. Warrander LK, Kroll J, Greenwood SL, Sibley CP, Jones RL, Heazell AEP. Placentally-derived Factors may be used to Predict Poor Pregnancy Outcome in Reduced Fetal Movements. *Arch Dis Child Fetal Neonatal Ed* 2011;96(Suppl 1):Fa12.
6. Maulik D. Doppler velocimetry for fetal surveillance: Adverse perinatal outcome and fetal hypoxia. In: Maulik D, editor. *Doppler ultrasound in Obstetrics and Gynecology* New York: Springer-Verlag, 1997.
7. Vintzileos AM, Fleming AD, Scorza WE, Wolf EJ, Balducci J, Campbell WA, et al. Relationship between fetal biophysical activities and umbilical cord blood gas values. *Am J Obstet Gynecol* 1991;165(3):707-13.
8. Warrander LK, Batra G, Bernatavicius G, Greenwood SL, Dutton P, Jones RL, et al. Maternal perception of reduced fetal movements is associated with altered placental structure and function. *PLoS One* 2012;7(4):e34851.
9. Tveit JV, Saastad E, Stray-Pedersen B, Bordaahl PE, Flenady V, Fretts R, et al. Reduction of late stillbirth with the introduction of fetal movement information and guidelines - a clinical quality improvement. *BMC Pregnancy Childbirth* 2009;9:32.

10. Tveit JV, Saastad E, Stray-Pedersen B, Bordahl PE, Flenady V, Fretts R, et al. Correction: Reduction of late stillbirth with the introduction of fetal movement information and guidelines - a clinical quality improvement. *BMC Pregnancy Childbirth* 2010;10:49.
11. Confidential Enquiry into Stillbirths and Deaths in Infancy. 8th Annual Report, 1 January–31 December 1999. London: Maternal and Child Health Research Consortium, 2001.
12. Royal College Of Obstetricians and Gynaecologists. Management of Reduced Fetal Movements. London: RCOG, 2011.