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Blood tests in late pregnancy to identify small babies and those at risk of stillbirth

Methods for monitoring blood glucose in pregnant women with diabetes to improve outcomes

Provision and uptake of routine antenatal services

Blood tests in late pregnancy to identify small babies and those at risk of stillbirth

Authors: Heazell AEP, Hayes DJL, Whitworth M, Takwoingi Y, Bayliss SE, Davenport C

Background

Placental dysfunction describes when the placenta does not meet the demands of the growing baby; it may result in a baby that is smaller than expected or is stillborn. Currently, it is not easy to detect placental dysfunction before birth; ultrasound scans are most often used to identify small babies. However, tests can measure substances made by the placenta in mothers' blood and urine which may detect a placenta that is not functioning well. We aimed to find the best test to identify placental dysfunction.

What we did

We searched for studies in October 2016 and identified a total of 24,059 studies - with 91 of those studies providing us with information that we could include in this review. We looked at ultrasound scanning and six different tests of placental substances, including proteins and hormones. These studies involved 175,426 women in total of which 15,471 pregnancies ended in the birth of a small baby and 740 pregnancies which ended in stillbirth.

What we found

Of the 91 included studies, 86 had information on small babies, of which 18 also looked at stillbirth; another five studies only looked at stillbirth. The most accurate test for detecting a small baby was ultrasound scan to estimate a baby's weight. Of the substances measured in mother's blood, human placental lactogen (hPL), a hormone produced by the placenta during pregnancy, was the most accurate. There was only one study which looked at both ultrasound scanning and measurement of a placental substance. Placental growth factor (PLGF) was the most accurate test of a placental substance to identify a baby that would be stillborn; there were no studies of ultrasound scanning to detect a baby that would be stillborn. Tests of placental substances were better at identifying a baby at risk of stillbirth than detecting a small baby.

Other important information to consider

Many of the studies included in this review were carried out between 1974 and 2016. Studies of placental substances were mostly carried out before 1991 and after 2013; earlier studies may not reflect developments in

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test technology. More studies are needed to find out whether a combination of ultrasound scans and mother's blood tests could improve identification of pregnancies which end in the birth of a small baby or in a stillborn baby. No studies were identified for this review that looked at the accuracy of ultrasound and blood tests used together.

Methods for monitoring blood glucose in pregnant women with diabetes to improve outcomes

Authors: Jones LV, Ray A, Moy F, Buckley BS

What is the issue and why is this important?

If a mother already has diabetes when she becomes pregnant, she and her baby are at higher risk of various problems. Women with existing diabetes that is not well-controlled at conception and in the first three months of pregnancy are at increased risk of miscarriage, having a baby with developmental problems or stillbirth. The baby is also at increased risk of developing diabetes in childhood. Problems for mothers include developing high blood pressure and associated ill-health, early births, large babies, difficult births and the need for caesarean section. During labour the baby is at increased risk of a shoulder becoming stuck (shoulder dystocia) and of bleeding in the brain (intracranial haemorrhage). After birth the baby is more likely to have low blood sugar levels (hypoglycaemia), jaundice and breathing problems. This means they are more likely to be admitted to intensive care. During pregnancy, the mother will have her blood glucose (sugar) levels monitored so appropriate steps can be taken to control her blood sugar.

Several methods of monitoring blood glucose are used, including regular testing at antenatal clinics and self-monitoring by women at home. The timing varies, such as monitoring before meals versus monitoring after meals, and how often levels are measured. For continuous glucose monitoring (CGM), technologies are used to transfer information directly from the woman to her clinician and include telemedicine (telephone and video systems, information technology) and digital technologies (mobile phones, tablets). The aim of these methods is to provide a more accurate measure of blood sugar levels so that they can be more effectively controlled, in order to reduce potential problems.

What evidence did we find?

This review is an update of a review first published in 2014 and updated in 2017. We searched for evidence from randomised controlled studies in November 2018. We found a total of 12 studies involving 863 women. Most of the women had type 1 diabetes (792 women) with fewer having type 2 diabetes (152 women). The trials were from Europe, the USA and Canada.

There were six different comparisons. These were: continuous versus intermittent monitoring of blood glucose (four studies, 609 women); two different ways of self-monitoring (two studies, 43 women); self-monitoring at home versus hospitalisation to control blood glucose levels (one study, 100 women); blood glucose monitoring before a meal (pre-prandial) versus blood glucose monitoring after a meal (post-prandial) (one study, 61 women); automated telemedicine monitoring versus conventional care (three studies, 84 women); and constant continuous monitoring versus intermittent continuous monitoring (one study, 25 women). Continuous versus intermittent monitoring may reduce overall high blood pressure problems during pregnancy (two studies, 384 women, low-quality evidence). However, it should be noted that only two of four relevant studies reported data for this outcome. There was more evidence on high blood pressure and protein in their urine (pre-eclampsia), which showed no clear difference (four studies, 609 women). We also found no difference in the number of women having a caesarean section (three studies, 427 women; moderate-quality evidence). There was not enough evidence to assess infant deaths or the combined outcome of infant deaths and ill-health as these outcomes were based on single studies. Four studies received some support from commercial partners.

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The other comparisons of different ways of monitoring blood glucose levels were based on very small studies or single studies with very low-quality evidence that did not show any clear differences in outcomes.

What does this mean?

Although the evidence from randomised controlled studies suggests that continuous monitoring of blood glucose levels may be more effective in reducing high blood pressure problems during pregnancy, only two studies reported on this. There was no clear reduction for pre-eclampsia based on evidence from four studies. For other methods of glucose monitoring, the review showed that there is not enough evidence to say with any certainty which monitoring method for blood glucose is best. More research is needed to find out which other monitoring method is best at reducing the risk of complications for pregnant women with pre-existing diabetes and to confirm the effectiveness of continuous glucose monitoring.

Provision and uptake of routine antenatal services

Authors: Downe S, Finlayson K, Tunçalp Ö, Gülmezoglu A

What is the aim of this review?

The aim of this Cochrane qualitative evidence synthesis is to explore women's and healthcare workers' views and experiences of antenatal care. We collected and analysed all relevant qualitative studies to answer this question, and include 85 studies.

The synthesis links to the Cochrane Reviews of the effectiveness of different antenatal models of care. The synthesis was designed to inform the World Health Organization guidelines for a positive pregnancy experience.

Key messages

Three areas of antenatal care are important to both women and service providers in all regions of the world. These are: the need to recognise and take account of the socio-cultural context in which care is provided; the need to ensure that service design and provision are appropriate, accessible, acceptable and of high quality; and that what matters to women and staff is personalised supportive care, information, and safety.

What was studied in this review?

Antenatal care is the health care women get while they are pregnant. During antenatal care visits, pregnant women are provided with support, reassurance, and information about pregnancy and birth, as well as tests and examinations to see if they and their baby are healthy. If any issues or problems are discovered, these can be managed during the clinic visit. If needed, women can be referred to other care providers. Different types of healthcare workers can give antenatal care. These include midwives, doctors, nurses, and, sometimes, traditional birth attendants.

The World Health Organization recommends that all pregnant women get antenatal care, but pregnant women do not always use this care. This may be because they do not think it is important, or because they cannot get to the healthcare facility. It may also be because the antenatal care they receive is of poor quality or because they are badly treated when they are there. By looking at studies of women's and healthcare workers' views and experiences of antenatal care, we aimed to learn more about what might help women to use antenatal care, and what might stop them using it.

What are the main findings of this review?

We include 85 studies in our synthesis. Forty-six studies explored the views and experiences of women who were pregnant or who had recently given birth. 17 studies explored the views and experiences of healthcare providers, including lay or community health workers, and 22 studies included the views of both women and healthcare providers. The studies took place in eight high-income countries, 18 middle-income countries and 12 low-income countries, in rural and urban locations.

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Our findings suggest that women use antenatal care if they find it is a positive experience that fits with their beliefs and values, is easy for them to access, affordable, and treats them as an individual. They want care that helps them to feel that they and their baby are safe, and that is provided by kind, caring, culturally sensitive, flexible, and respectful staff that have time to give them support and reassurance about the health and well-being of them and their babies. They also value tests and treatments that are offered when they need them, and information and advice that is relevant to them.

Our findings also suggest that healthcare staff want to be able to offer this kind of care. They would like to work in antenatal services that are properly funded, and that give them proper support, pay, training and education. They believe this will help them to have enough time to treat each pregnant woman as an individual, and to have the knowledge, skills resources and equipment to do their job well.

How up-to-date is this review?

The review authors searched for studies that had been published up to February 2019.

If you have any questions or comments with regard to the above document please feel free to contact me.

Kind regards

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