



Pregnancy Outcome Prediction Study

The POP Study was carried out in the Rosie Hospital in Cambridge in 2008 – 2013. More than 4000 women and their partners participated. Participation in the study involved 3 additional visits where we performed some extra scans, and obtained blood. We also obtained samples from the placenta after delivery. The data and samples have already been studied intensively and this research has yielded some important results briefly summarized below.

What we discovered

- ***The extra scans in pregnancy help to detect babies who are not growing well***

We discovered that the two extra scans increased the detection of babies who were smaller than expected from 20% to 57%. The study also identified a sub-group of small babies whose abdominal growth was unusually slow between mid-pregnancy and late pregnancy. These babies were at an increased risk of illness just after birth. Identifying babies who are not growing as expected means that the medical team can monitor pregnancies more closely for complications, particularly during labour. This study was published in the scientific journal *Lancet* in 2015.

- ***Growth of baby's thigh bone helps to predict risk of delivering preterm***

We also discovered that slow growth of the baby's thigh bone is associated with a higher risk of spontaneous preterm birth. This provides information to try and predict women at higher risk of preterm birth and to understand better the causes of preterm birth. This study was published in the *American Journal of Epidemiology* in 2016.

- ***Babies growing too fast may predict diabetes in mothers during pregnancy***

All POP study participants were offered a blood glucose (sugar) test at around 28 weeks of pregnancy. This is to identify women at risk of developing diabetes in pregnancy, about 4% of the women we studied developed this complication. The babies of these women had grown faster between 20 and 28 weeks of pregnancy than the babies of women who had normal blood glucose levels. A baby growing larger than usual may lead to difficulties during the delivery and increases the likelihood of needing induced labour or a caesarean section. Gestational diabetes may also affect the babies' health after birth meaning the baby may need specialist care after birth. To reduce problems associated with the overgrowth of the baby we suggest that the test should be brought forward to 24 weeks of pregnancy. This result was published in Diabetes Care, and reported in newspapers and the NHS choices website.

What we are doing now and the next steps

The POP study researchers are currently analysing the blood samples donated by the participants. 'Blood biomarkers' could help to identify high risk pregnancies more accurately. The first results have been published recently and this work is still ongoing.

We are currently planning a follow-up study of the children of POP study participants. This will help us learn how pregnancy affects the later growth and development of children.

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