Impact of aspirin and additional antenatal scans to women with a low PAPP-A
Yusuf L, Perry A, Barnes D, Bonney E, Campbell DJ
Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom

Objective
It is well known that a low level (<0.415MoM) of pregnancy associated plasma protein-A (PAPP-A) is a major risk factor for delivery of a small for gestational age (SGA) neonate. The incidence of low PAPP-A in the Leeds area is 6.55%. In November 2013, our local clinical guidelines were changed to introduce antenatal aspirin from 12 weeks until delivery, along with 2 additional antenatal growth scans at 30 and 36 weeks for women with low PAPP-A. We present the data comparing the outcomes of women before and after the change in practice.

Methods
We compared pregnancy outcome in 300 women with a low PAPP-A between January 2011 to October 2013 before the aspirin and antenatal scans were introduced (Study A) and in 300 women after the change in practice between November 2013 and December 2015 (Study B) in a large teaching hospital.

Results
There was a higher rate of normal vaginal delivery in Study A (68%) compared to 59.2% in the second study. There was a lower rate of LSCS in Study A (18%) compared to the second study (28.9%). Out of 291 live births in Study A, 16.8% of babies were born small for gestational age, defined as BW of <2500g at term (37+0 to 42+0). In the analysis in Study B, 26% of the 296 live births were born below the 10th centile on the Customised Growth Chart. The national average for SGA babies in the population is 7.4%(1) therefore this is in keeping with low PAPP-A being associated with an SGA baby. In Study A 55 women (18.3%) had a maternal complication 12.7% of which was pre-eclampsia and 17% pregnancy induced hypertension. In Study B 53 women (17.7%) had a maternal complication 11% of which was pre-eclampsia and 18.1% pregnancy induced hypertension. This suggests that aspirin is of limited benefit in prevention of pre-eclampsia. Five women received antenatal aspirin for reasons other than low PAPP-A including lupus, Factor V Leiden, previous pre-eclampsia and recurrent miscarriage. Only one of these women had had a SGA baby. 101 (33.6%) women received additional antenatal USS for indications other than low PAPP-A including diabetes (10.8%), previous SGA baby (9.9%), possible intrauterine growth restriction (30.6%) and reduced fetal movement (6.9%). The rest (190 women) received scans only due to having a low PAPP-A. The cost to the NHS of additional antenatal scans is estimated currently at £43 per scan (tariff assumes Band 7 ultrasonographer operating the ultrasound machine). The diagnosis of low PAPP-A is now an indication in this trust to move to a higher risk care pathway which costs an additional £628 per person (standard pathway £1046, intermediate pathway £1674). With an additional 190 women being upgraded to an intermediate pathway over a 2 year period, this has a financial impact of £59,660 per year.

Conclusion
The data suggests that aspirin is of limited benefit in prevention of pre-eclampsia. The rate of vaginal delivery has decreased since the introduction of aspirin and additional antenatal USS for women with low PAPP-A. The rate of LSCS has increased. The cause of this is multifactorial and any benefit of introducing aspirin and antenatal scanning is unclear due to the simultaneous introduction of customised growth charts.