

# First Trimester Biochemical Tests: Can We Predict Fetal Sex?

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## INTRODUCTION



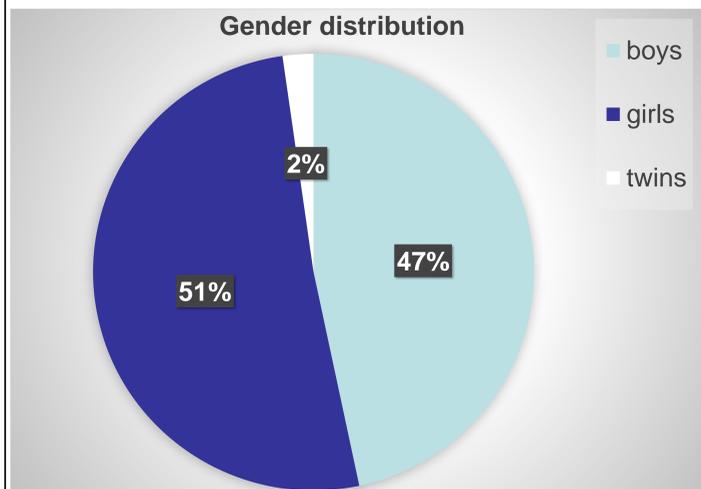
- regnant women, along with her partner and family, are often keen to know the sex of their unborn child
- Current practice commonly relies upon the USS, CVS, amniocentesis or non invasive prenatal tests (NIPT)
- USS scan vary in accuracy, depending on technique<sup>1</sup> and gestational age<sup>2</sup>.
- In the UK, women have their first scan between 11- 13 weeks, often wanting to know fetal sex
- It is normally about 5months before they get to know the fetal sex from USS
- A paper by NJ Cowans<sup>3</sup> shows significant sex differences in BHCG and PAPP-A, but it does not correlate the sex with the screening results.

## AIM

Determine if there are male and female differences of AFP,  $\beta$ -hCG, PAPP-A, NT levels from combined screening results.

## METHODS

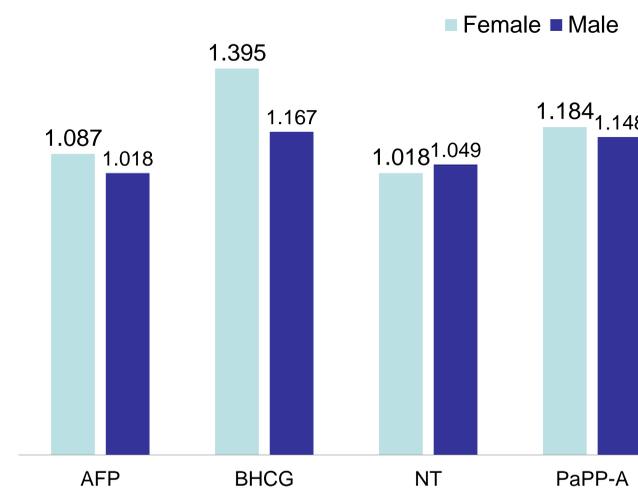
- Analysis of the combined screening results from 2164 women tested at Queen Charlotte's and Chelsea Hospital, London.
- A multivariate analysis was performed and results were compared to gender at delivery



## RESULTS

	For Both Sex (MoM)
AFP	0.43 - 3.25
B-HCG	0.22-10.55
NT	0.48 – 2.82
PaPP-A	0.02 – 5.06

Average MoM for each screening test



- Of the babies whose sex was known:
  - 891 were male and 975 female.
- One female stillborn, 43 (2%) were twins, 18 (1%) miscarried and 13 (1%) had a termination (for congenital abnormalities).
- We had no outcome for 10% of the screening results.
- Excluding couples with congenital abnormalities we calculated the standard deviation and using T-test calculated the P value's.

## CONCLUSION

- We found that there is no difference between the BHCG, NT or PAPP-A to predict the sex of the baby.
- The AFP is higher in male babies and this is statistically significant. ( $P < 0.01$ )
- No level of AFP above which male gender could be identified
- We do not believe that these values are enough for accurate estimation of the fetal sex

	P-Value	95% CI
AFP	<0.0001	-0.5424 to -0.3976
B-HCG	1.000	-0.875 to 0.0875
NT	0.303	-0.0291 to 0.0091
PaPP-A	0.759	-0.0541 to 0.0741



## REFERENCE

1. González Ballano I, *Et al.* Sonographic fetal sex determination in the first trimester: study in 2314 pregnancies and literature review. *Ginecol Obstet Mex.* 2015 Apr;83(4):207-12.
2. Efrat Z *Et al.* Fetal gender assignment by first-trimester ultrasound. *Ultrasound Obstet Gynecol.* 2006 Jun;27(6):619-21.
3. Cowans, NJ. *Et al.* The Impact of fetal gender on first trimester nuchal translucency and the maternal serum free B-HCG and PAPP-A MoM in normal trisomy 21 pregnancies. *Prenat diagn* 2009; 29 578-581