# THE PATHCARE NEWS

## INTRODUCTION OF EARLY FIRST TRIMESTER PRE-ECLAMPSIA SCREENING USING PLACENTAL GROWTH FACTOR (PLGF)

Pre-eclampsia (PE) is a multisystem disorder that typically affects 2-8% of pregnant women and is one of the leading causes of maternal and perinatal morbidity and mortality. Globally, 76 000 women and 500 000 babies die each year as a result of this disorder.

The burden of hypertension has been increasing over the last few decades in Sub- Saharan Africa, with a large percentage of the population remaining undiagnosed, untreated, or ineffectively treated.

Whilst maternal mortality has decreased by almost 44% in the last 25 years worldwide, approximately 99% of global maternal deaths in 2015 were shown to be from low-middle income countries, with Sub -Saharan Africa accounting for approximately 66%. Hypertensive disorders of pregnancy are the most common direct cause of maternal mortality, accounting for 18% of all maternal deaths in South Africa, with nearly 75% of the deaths thought to be potentially preventable.

### Screening Methods

The early identification of those at risk for PE is very important, as numerous studies have now demonstrated a reduction in the incidence of PE with low dose aspirin therapy during pregnancy. The accurate prediction of those at risk of PE becomes even more important to reduce complications through the use of aspirin.

Traditional PE prediction models using maternal characteristics and risk factors have been shown to be associated with low predictive values. Using the National Institute for Health and Care Excellence (NICE) predictive screening model, detection rates were shown to be 41% for pre-term PE (< 34weeks) and 34% for term PE (>34 weeks) with a false positive rate of 10%.

Multiparametric screening i.e. incorporating patient characteristics, serum biomarkers and ultrasound Doppler indices, has shown to be effective in identifying those at high risk of early PE (< 34 weeks gestation). International bodies such as the International Federation of Gynecology and Obstetrics (FIGO) have now encouraged screening for PE using this approach.

Pathcare Laboratories is now offering early PE screening using this approach in singleton pregnancies. PE testing can now be performed together with the Downs, Trisomy 13 and 18 screen, using the alpha™ Antenatal screening software.

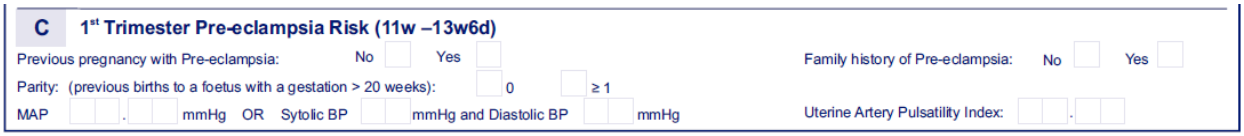
### Why should I screen?

- There is an opportunity for prevention through prophylaxis
- Allows for early risk stratification and high-risk care
- Early diagnosis reduces maternal morbidity and mortality

### What information is required for screening?

- Maternal Parameters: Parity, weight, ethnicity, previous history of PE and family history of PE
- Biochemical parameters: Pregnancy Associated Plasma Protein-A (PAPP-A) and Placental Growth Factor (PLGF). Both analytes are decreased in high-risk pregnancies
- Uterine Artery Pulsatility Index (Ut-API)
- Mean Arterial Pressure (MAP). If this cannot be performed, please submit a diastolic and systolic BP reading

A dedicated section is available on the request form however, the accuracy of the calculated risk is dependent on the completeness of the information provided.


C 1st Trimester Pre-eclampsia Risk (11w –13w6d)
Previous pregnancy with Pre-eclampsia: No Yes
Family history of Pre-eclampsia: No Yes
Parity: (previous births to a foetus with a gestation > 20 weeks): 0 ≥ 1
MAP . mmHg OR Sytolic BP mmHg and Diastolic BP mmHg
Uterine Artery Pulsatility Index: .

Screening using the alpha™ Antenatal screening software with the above parameters, improves the detection rates from 41% (using maternal parameters and risk factors) to 71% at a cut off 1:100 and a false positive rate of 5%.

## When must I submit the relevant information and phlebotomy samples to the laboratory?

- All information should be provided from 11w-13w6d of pregnancy. The laboratory will perform a Combined First Trimester Downs and Early PE screen.
- Phlebotomy should be completed for the following analytes: PAPP-A, Free BHCG and PLGF (SST- serum separator yellow top tube)
- A nuchal translucency (NT) must be included for the combined risk profile.

If preferred, PLGF biochemistry only, without risk calculation, can be requested. Risk can then be calculated by the requesting doctor using the free risk calculator provided by the Fetal Medicine Foundation at www.fetalmedicine.org.

## References


- Malone SL *et al.* Reviewing Accuracy of First Trimester Screening for Pre-eclampsia using maternal factors and Biomarkers. International Journal of Women's Health 2022;14: 1371 - 1384
- Moodley J *et al.* Hypertensive disorders in pregnancy: 2019 National Guideline. S Afr Med J 2019; 109 (9); 12723
- Poon LC et al. The International Federation of Gynecology and Obstetrics (FIGO) Initiative on pre-eclampsia. A pragmatic guide for first-trimester screening and prevention. Internation Journal of Gynecology and Obstetrics 2019;145 (Supplement 1): 1 - 33
- Alpha antenatal software programme (lmsalpha.co.uk)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