HUMAN HEALTH

ENVIRONMENTAL HEALTH

PRE-ECLAMPSIA SCREENING IN 1ST TRIMESTER

PERKINELMER PRE-ECLAMPSIA SCREENING SOLUTION

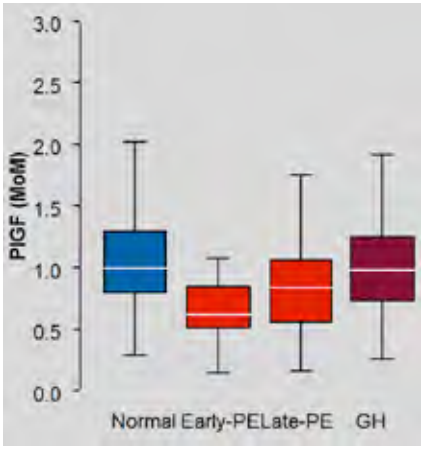
Not for distribution in the USA

PerkinElmer®
For the Better

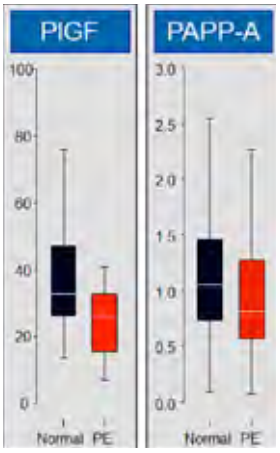
RELEVANT INFORMATION AVAILABLE EARLIER

How we can help you identify pre-eclampsia high risk cases in the 1st trimester

PlGF (Placental Growth Factor) plays a role in placental development and has been shown to be the most discriminating biochemical marker for pre-eclampsia (Akolekar, 2011). It is particularly discriminating for early-onset pre-eclampsia.



Box and whisker plots showing PlGF values at 11-13 weeks in normal pregnancies and those characterized by early-onset pre-eclampsia, late-onset pre-eclampsia and hypertension. Data courtesy of Fetal Medicine Foundation, Prof. Nicolaides.



Box and whisker plots showing PlGF values and PAPP-A values for 9,149 pregnancies of which early-onset pre-eclampsia was found in 50, late-onset pre-eclampsia was found in 150, and hypertension was found in 170. Data courtesy of Fetal Medicine Foundation, Prof. Nicolaides.

Best screening performance achieved using PlGF in combination with other markers

The table on the right (supplied courtesy of Prof. Howard Cuckle) shows model predicted performance of screening for pre-eclampsia employing various combinations of markers together with history.

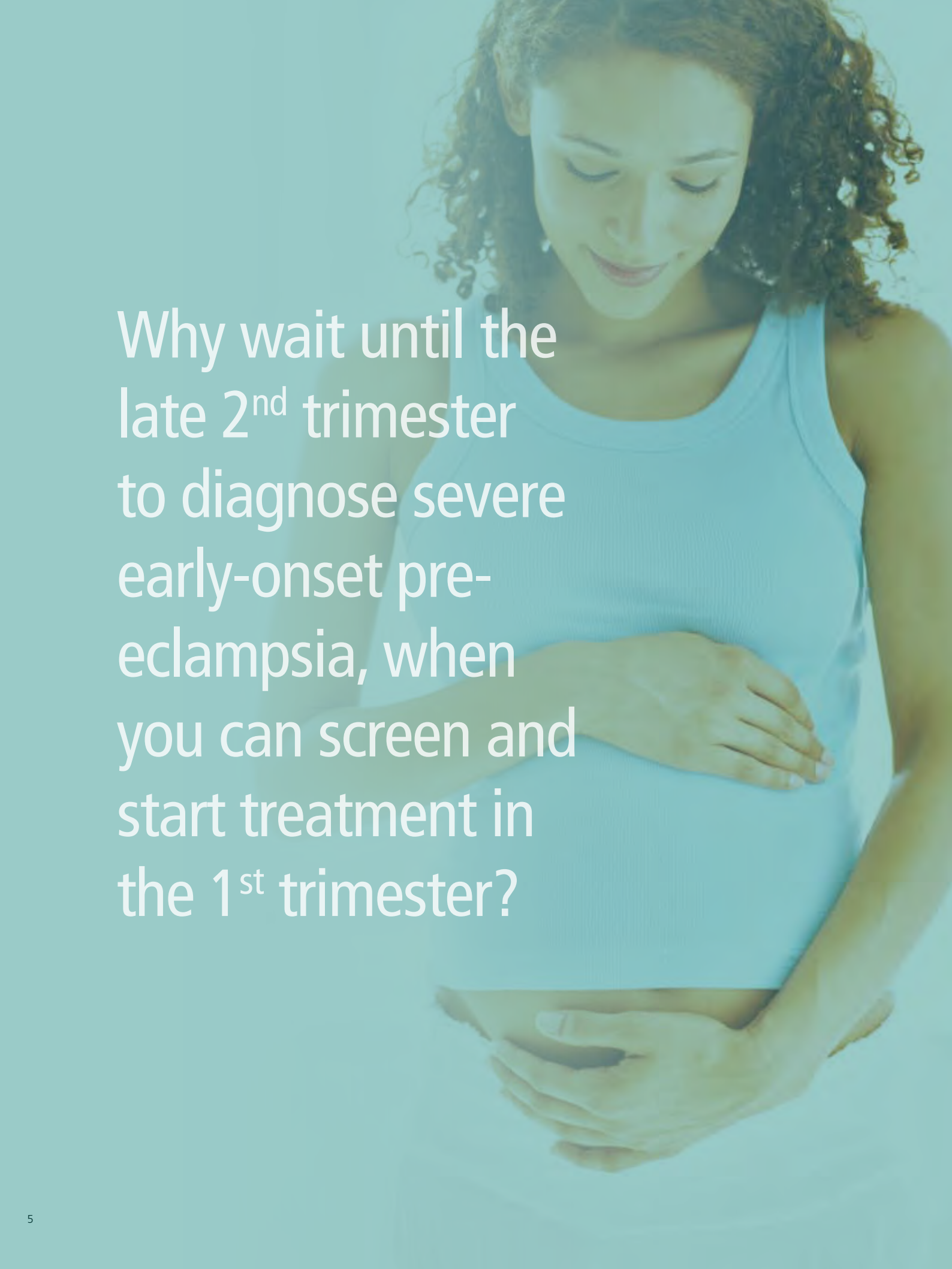
The study was performed using the latest 'prospective' study data set from Prof. Nicolaides' group at King's College Hospital. PlGF measurement was with PerkinElmer's DELFIA® Xpress PlGF assay* and risks were calculated by Prof. Cuckle's method, which is also the basis for the PerkinElmer Pre-eclampsia Predictor™ risk calculation software.

Parameters History with:	Early PE		Late PE	
	FPR 5%	FPR 10%	FPR 5%	FPR 10%
PlGF	50%	64%	36%	48%
PAPP-A	40%	52%	32%	45%
PlGF & PAPP-A	54%	66%	36%	49%
PlGF & MAP	64%	76%	46%	59%
PAPP-A & MAP	57%	69%	43%	56%
PlGF, PAPP-A & MAP	68%	78%	47%	59%
PlGF & uAD	67%	80%	36%	49%
PlGF, PAPP-A & uAD	69%	81%	36%	49%
PlGF, uAD & MAP	79%	89%	47%	59%
PAPP-A, uAD & MAP	74%	85%	44%	57%
PlGF, PAPP-A, uAD & MAP	81%	90%	47%	59%

uAD = Uterine Artery Doppler Pulsatility Index **PAPP-A = Pregnancy-Associated Plasma Protein - A**

MAP = Mean Arterial Blood Pressure **PlGF = Placental Growth Factor**

*DELFIA Xpress PlGF kit is not available in the USA, Canada, China, Japan and in some other Asian and Latin-American countries



Why wait until the late 2nd trimester to diagnose severe early-onset pre-eclampsia, when you can screen and start treatment in the 1st trimester?

START TREATMENT IN TIME

Why screen for pre-eclampsia?

- Down syndrome has incidence of around 1/700. Early-onset pre-eclampsia is three and a half times more prevalent, being associated with 1/200 pregnancies.
- Elective caesarian section necessitated by early-onset pre-eclampsia is a major cause of preterm birth, itself detrimental to the health of the developing child.
- According to a recent meta-analysis 89% of early-onset pre-eclampsia can be prevented or delayed if aspirin treatment is started early in the pregnancy (Roberge, S. et al 2012)

Why early-onset pre-eclampsia is the main focus

Early-onset pre-eclampsia means pre-eclampsia causing delivery before week 34. Early-onset pre-eclampsia represents about a quarter of all pre-eclampsia cases, but is responsible for the majority of morbidity and mortality. Early-onset pre-eclampsia, unlike late-onset pre-eclampsia, is understood to be associated with abnormal placental morphology (Egbor et al 2006). There is much to support contemporary opinions that pre-eclampsia cases may fall into two subsets on the basis of their etiology.

Aspirin treatment works, if started in time

Although the fact that aspirin treatment is of value in delaying pre-eclampsia is accepted (Duley et al. 2007), an associated view has persisted that the benefits are modest. More recent work has shown this interpretation to be incorrect. On the contrary, aspirin treatment can more than halve the risk of pre-eclampsia, preterm birth and intrauterine growth retardation (IUGR) (Bujold et al. 2010). This work consisted of a meta study which built on the results of the older study to include subgroup analysis according to gestational age at the initiation of therapy. A key discovery was that aspirin treatment should be initiated before 16 weeks of pregnancy in order to achieve the benefits listed above.

A recent metastudy, characterized by extremely well-defined inclusion criteria, has shown that the initiation of low-dose aspirin prophylaxis at or before 16 weeks' gestation resulted in an 89% reduction of pre-eclampsia delivered before 37 weeks' gestation, but had no effect on the risk of term pre-eclampsia (Roberge et al. 2012.) This result led to the suggestion that early administration of low-dose aspirin improves placentation. Such an effect would result firstly in a reduction in the overall risk of the disease and secondly in a shift from early-onset severe disease requiring preterm delivery to a milder disease presenting at term.

Preterm pre-eclampsia			**Term pre-eclampsia**		
Aspirin incidence	Control incidence	Relative risk (95% CI)	Aspirin incidence	Control incidence	Relative risk (95% CI)
0.71%	15.8%	0.11 (0.04, 0.33), $p < 0.01$	13.1%	11.7%	0.98 (0.42, 2.33), $p = 0.97$

Data from Roberge et al. 2012

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COMPLETE PACKAGE FOR PRE-ECLAMPSIA

Pre-eclampsia screening at 11 to 13+6 weeks

PerkinElmer is the first company to provide a complete, practical solution for pre-eclampsia prediction. As well as leading the way in biochemistry assays and instrumentation, the company provides essential items such as native controls to assure the integrity of results, and risk calculation software based on the latest knowledge.

- **A choice of established platforms**
  Both aneuploidy screening and pre-eclampsia screening with the same instrument
- **PlGF assay kits**
  The only validated 1st trimester assay for prediction of pre-eclampsia- available on all PerkinElmer DELFIA plaftforms
- **Pre-eclampsia Predictor**
  The first commercial first trimester pre-eclampsia risk calculation software
- **PlGF controls**
  The only native pregnancy serum IVD PlGF controls

The products represented for pre-eclampsia are not available in the USA, China, Japan and in some other Asian and Latin-American countries.
Some of the products may not be lisenced according to Canadian law.

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