# DELFIA PRENATAL SCREENING

## PRENATAL SCREENING SOLUTIONS FROM THE GLOBAL LEADER IN MATERNAL-FETAL HEALTH

Brochure not for distribution in the USA

PerkinElmer®
*For the Better*

# FULL SUPPORT FOR FIRST TRIMESTER SCREENING

**In most countries, national recommendations guide and support the development of prenatal screening programs. While these recommendations often focus on general policies and goals, they can also include detailed recommendations on screening models and program setup.**

PerkinElmer's prenatal screening assays are clinically validated and support all modern prenatal screening strategies in the first and second trimesters and contingent testing with NIPT. Together with LifeCycle™ Prenatal Screening software, PerkinElmer's high quality assays help you to achieve high performance in your screening program.

## Timing matters

Today prenatal testing for trisomies such as Down syndrome should be carried out as early as possible – preferably in the first trimester of pregnancy. The advantage of early testing is that it offers more time for counselling, consideration and action if the risk of anomaly is found to be high. In prenatal testing, the longer you wait, the fewer options you have.

PerkinElmer has a complete panel of first trimester analytes and fully supports the move toward first trimester prenatal screening.

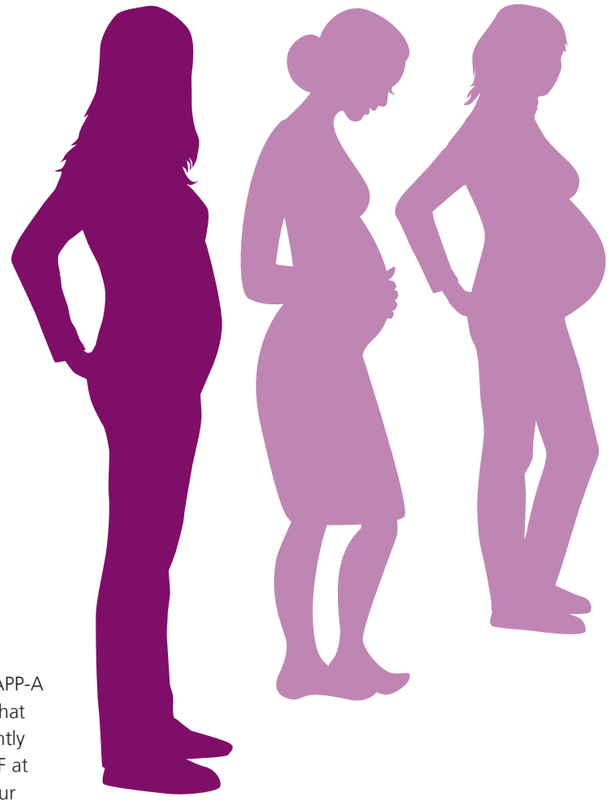
## Better 1T screening for aneuploidy

Routine screening for Down syndrome in the first trimester of pregnancy using the Combined test (free hCGß, PAPP-A and ultrasound nuchal translucency measurement, NT) is now the standard of prenatal care in many countries.

Yet current research shows that including maternal serum placental growth factor (PlGF) and alpha fetoprotein (AFP) in a first trimester aneuploidy screening program improves detection rates and reduces the need for invasive testing.[1-5]

> The performance of First Trimester Screening can be enhanced by adding PlGF and AFP. Even without nuchal translucency, the test would perform well."
>
> HUANG ET AL 2015

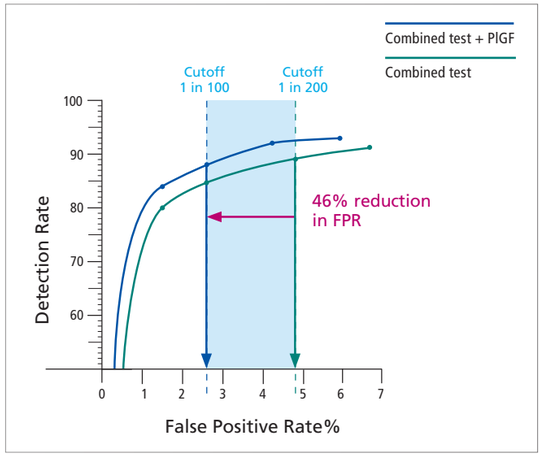




## Cut your false positive rate in half with PlGF

Introducing the PlGF marker to the Combined test (NT, PAPP-A and free hCGB) delivers the same detection rate (DR) as that achieved with the combined test alone, but at a significantly lower false positive rate (FPR). In fact, the addition of PlGF at 11–13$^{+6}$ weeks gives you two choices: You can reduce your FPR by 46% at a fixed DR or increase the overall DR by 3%.[3]

**PlGF SCREEN FOR DOWN SYNDROME MORE EFFECTIVELY**




This Receiver Operating Characteristic curve that shows how the addition of PlGF (blue curve) lowers the risk cutoff level for 46% fewer false positives. The green curve shows performance for the combined test without PlGF, based on results reported by Pandya et al. (2012).

## Reduce cost and concern with PlGF

PlGF is the multipurpose biomarker of choice in prenatal screening. Not only does it reduce false positives, but also the need for invasive procedures. With PlGF in your screening program, you can achieve substantial cost savings and allocate resources where they are most needed. When PlGF is added to first trimester Down syndrome screening program, you can double the benefits by using the same result to calculate pre-eclampsia risk, as women with elevated pre-eclampsia risk show low levels of PlGF. The most effective way to identify women in high risk for pre-eclampsia is combined screening program with PlGF 1-2-3™ blood test, maternal medical history assessment, mean arterial blood pressure measurement and, if available, uterine artery Doppler ultrasonography.

### Double the benefits

**PerkinElmer PlGF assay is CE-marked for both Down syndrome and pre-eclampsia screening. One assay, two risk results.**

## Expanded combined – optimum 1T performance with four marker

When even higher screening performance is needed, all four markers – PAPP-A, Free hCGß, AFP and PlGF – can be used together with ultrasound NT measurement to calculate the risk for aneuploidy. The expanded combined model achieves a detection rate of more than 91% at a false positive rate of 5%, or a similar detection rate as with the combined model, but with 40% fewer false positives.[5]

**1T QUAD for biochemistry only Down syndrome screening in first trimester.**

Comparison of first trimester screening models[5]

| Model | Markers | DR (%) at FPR of 5% |
|---|---|---|
| 1T Quad | PAPP-A + free hCGß + PlGF + AFP | 81.7 |
| 1T Combined | PAPP-A + free hCGß + NT | 87.2 |
| 1T Combined + PlGF | PAPP-A + free hCGß + NT + PlGF | 89.8 |
| 1T Expanded combined | PAPP-A + free hCGß +NT +PlGF + AFP | 91.2 |

NT= Nuchal Translucency, DR= Detection Rate, FPR= False Positive Rate

PerkinElmer does not endorse or make recommendations with respect to research, medication, or treatments. All information presented is for informational purposes only and is not intended as medical advice. For country specific recommendations, please consult your local health care professionals.



## 1T Quad – biochemistry only screening for first trimester

PerkinElmer offers four CE-marked assays – PAPP-A, free hCGß, PlGF and AFP – for 1T screening of Down syndrome. Together these assays enable screening in the first trimester even in the absence of a NT measurement.

In fact, recent studies show that maternal serum placental growth factor (PlGF) and alpha fetoprotein (AFP) measured together with the two established markers PAPP-A and free hCGß in the first trimester of pregnancy can be more effective than conventional 2T triple marker tests.[5-8]

1T Quad is also similar in performance to the 2T Quad test.[5-8]

### What is 1T Quad?

**Four CE-marked assays – PAPP-A, free hCGß, PlGF and AFP together for 1T screening of Down syndrome.**

### Why choose 1T Quad?

- **New biochemistry-only screening protocol for Down syndrome in the first trimester**
- **When NT measurement is not available – achieve performance equivalent to 2T screening**
- **Earlier risk assessment of other pregnancy complications like pre-eclampsia**
- **Cost-efficient management of screening resources**

# SUPPORT YOUR NIPT PROGRAM WITH CONTINGENT SCREENING

Today non-invasive prenatal testing (NIPT) using cell-free DNA (cfDNA) is available in many countries as an alternative method for the identification of chromosomal aneuploidies. Women who required invasive testing in the past now often choose NIPT as the first approach to confirm positive finding from serum screening. Although interest in NIPT is increasing rapidly, cost and availability continue to be a challenge.

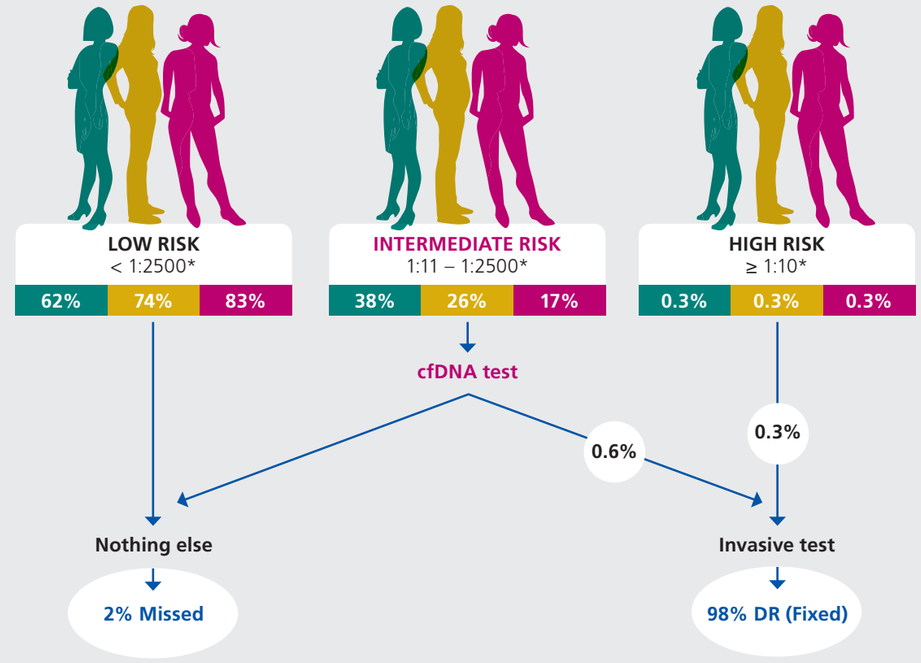
Contingent screening is a cost-effective option if NIPT availability is limited. In contingent screening, pregnancies are classified into three risk groups using first trimester biochemistry and, if available, ultrasound results. Women with low risk pregnancies require no further testing for aneuploidy, while women with high risk pregnancies receive early prenatal diagnosis. Women in the intermediate group are referred to further testing.

| Markers | DR% | FPR% |
|---|---|---|
| 1T Quad (PAPP-A + free hCGß + PlGF + AFP) | 98 | 38 |
| 1T Combined (NT + PAPP-A + free hCGß) | 98 | 26 |
| 1T Quad + NT | 98 | 17 |
| 1T Quad + NT + DV-PIV | 98 | 8 |

Modeled performance, Nicolaides et al.[9]

**Where ultrasound resources are available, a significant reduction in the false positive rate is possible, thereby further reducing the percentage of women referred to NIPT.[9]**

## FIRST TRIMESTER SCREENING




Based on data by Nicolaides et al 2013.
* Tailored cutoffs can be implemented to optimize detection rates and the percentage of cfDNA testing required.

Contingent screening is also useful when access to ultrasound resources is limited. If ultrasound is not available to all, 1T Quad can be used as a first tier test to identify suitable women for ultrasound examination.

False Positive Rates at the Given Detection Rates[5]

| Markers | 90% | 95% | 98% |
|---|---|---|---|
| 1T Combined (NT + PAPP-A + free hCGß) | 4.3 | 11.2 | 25.5 |
| 1T Quad (PAPP-A free hCGß + PlGF + AFP) | 13.1 | 23.1 | 38.0 |

Modeled performance, Nicolaides et al.[9]

**For a 98% DR with 1T Quad, 38% of women would be referred to NT or NIPT. The higher false positive rate is acceptable because NT and NIPT are non-invasive techniques with minimal risk of fetal loss.[9]**

# BETTER CARE IN THE SECOND TRIMESTER OF PREGNANCY

**Traditionally, screening for trisomies has been performed in the second trimester of pregnancy. Today, second trimester screening is  often used in regions where ultrasound resources are not available for all or in case women don't contact their healthcare provider before the second trimester.**

**Second trimester markers are also important part of the integrated and sequential screening strategies, where the final risk is calculated based on both first and second trimester serum markers. PerkinElmer supports all second trimester screening models, Double, Triple and Quad.**

Second trimester screening models and detection rates at fixed 5% false positive rate

| Screening model | Markers | DR* | FPR |
|---|---|---|---|
| 2T Double | AFP + hCG or Free hCGß | 65 – 70% | 5% |
| 2T Triple | AFP + hCG or Free hCGß + uE3 | 70 – 75% | 5% |
| 2T Quad | AFP + hCG or Free hCGß + uE3 + Inhibin A | 72 – 83% | 5% |

*Given as examples, some variation depending on study



## Inhibin A – upgrade to optimum 2T performance

Upgrading to the Quad test is often the only way to meet national screening guidelines for second trimester. Inhibin A is also used in integrated and serum integrated screening strategies.

When AutoDELFIA® Inhibin A is added to a combination of other 2T serum markers (AFP and free hCGß or AFP, free hCGß and uE3), the screening performance improves in both marker combinations.[10]

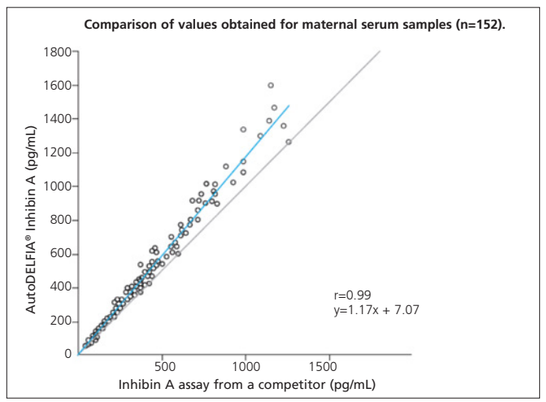
Performance of second trimester screening models with and without inhibin A.[10]

| | Detection rate at 3% fixed False Positive Rate | Detection rate at 5% fixed False Positive Rate |
|---|---|---|
| free hCGß, AFP | 62.8 | 65.1 |
| free hCGß + AFP + **Inhibin A** | 69.8 | 76.7 |
| free hCGß, hAFP + uE3 | 62.8 | 67.4 |
| free hCGß, hAFP + uE3 + **Inhibin A** | 67.4 | 76.7 |

## Excellent clinical performance

When compared to competitor's product, the results show excellent correlation between the two methods. In addition AutoDELFIA Inhibin A kit provides excellent precision over the whole clinically relevant concentration range, with total assay variation typically less than 5%. The Limit of Detection (LoD) was determined as 5,7 pg/ml based on 216 determinations of low level samples.[11]

Make sure you have all available options for second trimester screening and choose PerkinElmer as your screening solution partner.



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**PerkinElmer is committed to advancing maternal-fetal health**

With more than 10 million prenatal screens performed annually on our solutions, PerkinElmer is the globally recognized leader in maternal fetal health. Our complete screening and diagnostic solutions, combining clinically proven assays, equipment and informatics, are devoted to supporting the needs of all women worldwide. PerkinElmer is committed to leveraging this knowledge to advance the science of maternal fetal health and expand the capabilities of laboratory specialists and clinicians now, and in the future.


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