# Non-invasive EXamination of Trisomy (NEXT) Study: Directed Cell-Free DNA Analysis versus 1st Trimester Combined Screening for Trisomy 21 Risk Assessment in a Large Routine Pregnancy Population

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## Description:

Background
Non-invasive prenatal testing (NIPT) with cell-free DNA (cfDNA) has been shown in several studies to be highly accurate for fetal trisomy evaluation in high-risk pregnant women. The performance of NIPT in a routine pregnancy population has yet to be evaluated in a large prospective study.
Objective
To compare the performance of NIPT with directed cfDNA analysis to first trimester combined screening (FTS) for fetal trisomy 21 risk assessment in a general pregnancy population.
Methods
A prospective multi-center blinded cohort study was undertaken comparing the HarmonyTM Prenatal Test, a directed cfDNA test, with FTS using first trimester PAPP-A, hCG and nuchal translucency measurement. Pregnant women with a singleton fetus presenting in the first trimester for routine prenatal screening for fetal aneuploidy were eligible. Participants had both FTS and Harmony testing performed. Women were provided with FTS results as part of routine care. Participants and care providers were blinded to Harmony results, calculated as probability scores. Pregnancies were followed for newborn outcomes. Invasive testing results or neonatal phenotype, with karyotype confirmation in cases of suspected aneuploidy, were used for trisomy 21 identification. Harmony, FTS results and outcomes were reported to an independent data coordinating center. The primary outcome was the comparison of the area under the ROC curve for trisomy 21 test performance of the Harmony and FTS tests.
Results
A total of 18,955 women were enrolled across 38 centers in the United States, Canada and Europe from March 2012 to April 2013. The mean maternal age was 30.6 (range: 18-52) years and the mean gestational age was 12.4 (10-14.3) weeks. As of this submission, 16,286 subjects have completed all study visits with 88% of eligible subjects successfully completing follow-up. The last delivery date was November 25, 2013.
Final results of this large prospective international study will be presented and implications for the use of NIPT for trisomy 21 risk assessment in the general pregnancy population will be discussed.

## Learning Objectives:

## Keywords:

Cell free DNA

Noninvasive prenatal diagnosis/screening

Prenatal Diagnosis

## Primary Topic Focus:

Perinatal Genetics