Frequently asked questions

QNatal® Advanced aneuploidy screening in pregnant women at average or high risk—publication in *Molecular Genetics & Genomic Medicine*

Key points

1. What was the purpose of this article?
A previous publication reported the QNatal Advanced noninvasive prenatal test provided strong performance for detecting fetal aneuploidies in a high-risk population.[1] The present study evaluated the performance of the QNatal Advanced test for detecting fetal aneuploidies in a population that included both average- and high-risk pregnancies.

2. What is the significance of the findings?
The results indicated that this assay has maintained excellent analytical sensitivity and specificity for trisomy 21, 18, and 13. The test demonstrated strong positive predictive values (PPVs) in a population that included pregnancies at average risk for fetal aneuploidy.

Details

3. Were all pregnancies included in the study at high risk for fetal aneuploidy?
No. This study included both high-risk and average-risk pregnancies. In the study population, 13% of pregnancies were considered at average risk and 87% at high risk based on International Classification of Diseases (ICD-9/ICD-10) diagnosis codes.

4. How were pregnancy outcomes determined?
As part of a continuous improvement process, Quest Genomic Services contacted ordering providers to request information on pregnancy outcomes and results from confirmatory diagnostic testing, including routine cytogenetic and microarray analysis.

5. How did the performance of QNatal Advanced in this study compare to prior published studies?
Compared to the previously published QNatal Advanced study,[1] this study demonstrated continued strong clinical performance characteristics but in a population that included average-risk pregnancies. Among aneuploidy results with confirmed outcomes, the PPV was highest for trisomy 21 (98.1%), followed by trisomy 18 (88.2%) and trisomy 13 (59.3%). PPVs were 69.0% for sex chromosome aneuploidies (SCAs) and 75.0% for microdeletions. Overall, PPV was 87.2%, sensitivity was 97.9%, and specificity was 99.9%.

6. How many samples could not be reported ("no-call")?
Of all tests ordered during the study period, 288 (0.4%) could not be completed because of technical reasons and 1954 (2.6%) could not be performed because of low fetal fraction. Professional societies recommend measuring and reporting the fetal fraction to inform clinical management.

7. What do professional organizations say about fetal aneuploidy testing for average-risk pregnancies?
The American College of Obstetrics and Gynecology recommends that all women be offered the option of aneuploidy screening or diagnostic testing for fetal genetic disorders, regardless of maternal age.[2] The American College of Medical Genetics has stated that there is strong evidence that noninvasive prenatal screening can replace conventional screening for trisomies 13, 18, and 21, regardless of maternal age.[3]

References

1. Strom CM, Anderson B, Tsao D, et al. Improving the positive predictive value of non-invasive prenatal screening (NIPS). *PLoS One.* 2017;12(3):e0167130. doi: 10.1371/journal.pone.0167130
2. Committee on Practice Bulletins—Obstetrics, Committee on Genetics, and the Society for Maternal-Fetal Medicine (2016). Practice Bulletin No. 163: Screening for Fetal Aneuploidy. *Obstet Gynecol.* 2016;127(5):e123-e137. doi: 10.1097/AOG.0000000000001406
3. Gregg AR, Skotko BG, Beckendorf, J, et al. (2016). Noninvasive prenatal screening for fetal aneuploidy, 2016 update: a position statement of the American College of Medical Genetics and Genomics. *Genet Med.* 2016;18(10):1056-1065. doi: 10.1038/gim.2016.97

For the full article, please see: Guy C, Haji-Sheikhi F, Rowland CM, et al. Prenatal cell-free DNA screening for fetal aneuploidy in pregnant women at average or high risk: results from a large US clinical laboratory. *Mol Genet Genomic Med.* 2019;7:e545. https://doi.org/10.1002/mgg3.545

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