GEN-2-043 Attachment E-verifi® from Eurofins NTD Instruction Manual

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		Functional Area	QM - Quality Management

Written by	Elizabeth Sylander
Functional Document Owner	Eurofins D CDS US Laboratory Management; Eurofins D CDS US Quality Management Department; Eurofins D CDS US Quality Control Department
Review and Approval	• Reviewers: Stephanie Zichi; Margaret Palladino; David Krantz; Norman Moore; Christina Deer; Lisa Schmitt; Jonathan Hayden • Approver (Laboratory Director Only): Terrence Hallahan
Reason for Revision	Remove specimen collection section

Revision Log

Date	Rev.	Author	Description
May 18, 2018	1	Eurofins D CDS US Laboratory Management; Eurofins D CDS US Quality Management Department; Eurofins D CDS US Quality Control Department	

Electronic Signatures

Stephanie Zichi;Review;Jul 3, 2018 9:24 AM EDT
Christina Deer;Review;Jul 3, 2018 9:31 AM EDT
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Margaret Palladino;Review;Jul 9, 2018 11:27 AM EDT
Norman Moore;Review;Jul 10, 2018 8:32 AM EDT
Lisa Schmitt;Review;Jul 11, 2018 10:30 AM EDT
Terrence Hallahan;Approval;Jul 18, 2018 9:52 AM EDT

Reporting Title: Verifi®

Test Definition: CFDNA1
Testing Location: Redwood City, CA
Reporting Location: Melville, NY

Description:
Circulating cell-free DNA is examined from maternal whole-blood to identify fetal aneuploidies Trisomy 21, Trisomy 18 and Trisomy 13. Optionally, the test may be used to identify sex chromosome abnormalities (monosomy X, XXX, XXY,and XYY), Aneuploidy (trisomy) of all chromosomes, including sex chromosome aneuploidies and/or microdeletions such as 1p36 deletion, 4p-(Wolf-Hirschhorn syndrome), 5p- (cri-du-chat syndrome),15q11.2 (Prader-Willi syndrome/ Angelman syndrome),and 22q11.2 deletion (DiGeorge).

Analytical Method(s):
Nucleic Acid extraction, DNA sequencing, and analysis of sequencing results to determine fetal aneuploidy and fetal microdeletions (if applicable). Test performed at Illumina, Inc. 800 Saginaw Drive, Redwood City, CA 94063.

Patient preparations:
Counsel patient on prenatal screening for detectable genetic abnormalities with cell-free DNA testing.

Specimen Requirements:

Special Timing: Draw blood after 10 weeks, 0 days

Container/Tube: Strek Tube

Specimen Volume: Fill tube to capacity

Specimen Stability: Whole blood specimens are stable at ambient temperature for 5 days.

Specimen Rejection Criteria: hemolysis, lipemia, incorrect tube type

Specimen Collection Instructions

See Blood Specimen Collection from Venipuncture Instruction Manual.

Additional Information:

1. Indications for Testing: Patient is at high risk for aneuploidy. Inidcations of high risk include advanced maternal age, positive serum screen, abnormal ultrasound and history suggestive of increased risk for the specified chromosomal abnormalities.

CPT Codes: 81420

Reference Values:
Aneuploidy:
Aneuploidy suspected (borderline value)
Aneuploidy detected
No aneuploidy detected

Sex Chromosomes:
- Aneuploidy detected
- No aneuploidy detected - Results consistent with two sex chromosomes (XX)
- No aneuploidy detected - Results consistent with two sex chromosomes (XY)
- Twin pregnancy:
  - Detected - Results consistent with the presence of Y chromosome material
  - Not Detected - Results consistent with the absence of Y chromosome material

Microdeletions:
- Abnormality detected
- Not detected
- No microdeletions detected

An Interpretive Report will be provided.

Supplemental Report:
No

Testing Algorithm:

Follow up testing:
1. Aneuploidy Detected or Suspected: Counsel patient about invasive diagnostic procedures such as CVS or amniocentesis.
2. Microdeletion Detected or Suspected: Counsel patient about invasive diagnostic procedures such as CVS or amniocentesis with microarray analysis.

Consents/Authorizations:

Order Practitioners Acknowledgment

The ordering physician MUST have on file at Eurofins NTD a signed 'Acknowledgement of Practitioner's Obligation to Obtain Informed Consent for Genetic Testing' for a test request to be processed.

Acknowledgement of Practitioner's Obligation to Obtain Informed Consent for Genetic Testing

- I understand that The New York State Department of Health, Clinical Laboratory Standards of Practice requires NY-permitted laboratories to notify ordering practitioners that they are required to obtain informed consent for genetic testing from their patients.
- I am aware that Eurofins, NTD, LLC (PFI 3173) ("Eurofins") provides a genetic test consent form that includes test-specific information to aid me in fulfilling my obligations to obtain informed consent.
- I understand that informed consent for the NIPT tests must be obtained utilizing the form specific for that test, copies of which have been provided to me by Eurofins
  - I have been apprised that I may obtain these forms in hard copy from Eurofins, and that the forms are also available on the Eurofins website (http://www.ntdlabs.com/providers/consent_forms.php).
- I acknowledge that this information has been made available to me for patient use in decision-making and the informed consent process.
- I acknowledge that I have reviewed and understand the informed consent for genetic testing form relevant to the testing I am ordering as described above and that the information contained in the form shall be conveyed to each patient and/or their guardian in obtaining full and effective informed consent for each genetic test I order.
- I confirm that I shall maintain documentation that I obtained informed consent for such testing in each of my patients' medical charts.
- I confirm that I will make available and provide a copy of the signed patient consent form to Eurofins NTD, LLC upon request.

_____ _____

Practitioner Signature Date

_____

Printed Name

_____

Hospital, Facility or Clinic Name

_____

Address

_____

City, State, Zip

_____

Phone #

_____

Fax#

NTD Account #_____

Please Return to:
Eurofins NTD, LLC, 80 Ruland Road, Suite 1, Melville, NY 11780
Fax: 631-425-0864

Patient Informed Consent

The patient MUST sign a verifi 'Patient Informed Consent' form that is maintained in the ordering physicians office.

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Patient informed consent

INTRODUCTION: This form describes the benefits, risks, and limitations of this screening test. You should seek pre-test counseling by a genetic counselor or other experienced health care provider prior to undergoing this test. Read this form carefully – and ask any questions you may have of your health care provider -- before making your decision about testing.

PURPOSE: The purpose of the Verifi™ Test and the Verifi™ Plus Test is to screen your pregnancy for certain chromosomal abnormalities, also known as "aneuploidies." Both tests give information about whether there may be extra copies (trisomy) of chromosomes 21, 18, and 13, and the option to know if there is an extra copy of a sex chromosome (X or Y), and/or a missing copy of sex chromosome (thMX). Fetal sex may also be reported. The Verifi™ Plus Test has the option to screen for aneuploidies (extra copies) in all chromosomes. In addition, the option to screen for the following microdeletions (small, missing parts of chromosomes) syndromes: 1p36 deletion, 4p- (Wolf-Hirschhorn syndrome), 5p- (cri-du-chat syndrome), 15q11.2 (Prader-Willi syndrome/Angelman syndrome), 22q11.2 deletion (DiGeorge syndrome or velocardiofacial syndrome) is also available. For chromosomes 21, 18, and 13, the Verifi™ Test is validated in singleton and twin pregnancies. In twin pregnancies, sex chromosome testing can only screen for the presence or absence of the Y chromosome, and not for extra or missing sex chromosomes. Both Verifi™ and Verifi™ Plus can be performed as early as 10 weeks 0 days gestational age. Consult your health care provider if you would like more information about this screening test, including risks, limitations, performance data, error rates, descriptions of the conditions being screened, and what these results may mean to your pregnancy.

HOW THIS TEST WORKS: This test screens for specific chromosomal abnormalities by looking at the DNA (genetic material) in your blood. The sample of blood includes a combination of both your DNA and the DNA from the pregnancy. A technology called massively parallel sequencing is used to count the amount of DNA from each test chromosome and/or from specific regions of chromosomes. The laboratory then uses an analysis method to determine if each of the conditions you have elected to test for is likely to be present or absent.

SEX OF PREGNANCY: Depending upon the option you and your health care provider elect, the test results may include the sex of the pregnancy. If you do not wish to know the sex, please tell your health care provider not to disclose this information to you. Depending upon the test ordered, you may not be able to prevent learning the sex of your pregnancy. In rare instances, incorrect sex results can occur.

LIMITATIONS OF THE TEST: These are screening tests that look only for specific chromosomal abnormalities. This means that other chromosomal abnormalities may be present and could affect your pregnancy. A "No Aneuploidy Detected" result does not guarantee a healthy pregnancy or baby and does not eliminate the possibility that your pregnancy may have birth defects, genetic conditions, or other conditions, such as open neural tube defects or autism.

There is a small possibility that the test results might not reflect the chromosomes of the fetus, but may reflect chromosomal changes of the placenta (confined placental mosaicism, CPM) or of you (maternal chromosomal abnormalities). While these tests are not designed to assess your health, in some cases, information about your health may be revealed directly or indirectly (e.g., when combined with other information). Examples include maternal XXX, sex chromosome status or benign or malignant maternal neoplasms. In a twin pregnancy, the status of each individual fetus cannot be determined.

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These tests, like many tests, have limitations, including false negative and false positive results. This means that the chromosomal abnormality being tested for may be present even if you receive a negative result (this is called a 'false negative'), or that you may receive a positive result for the chromosomal abnormality being tested for, even though the abnormality is not actually present (this is called a 'false positive').

In the case of a twin pregnancy, the presence or absence of Y chromosome material can be reported. The occurrence of sex chromosome aneuploidies cannot be evaluated in twin pregnancies. In the case of a vanishing twin, the test result may reflect the DNA of the vanishing twin, leading to a higher probability of false positive or false negative results.

No irreversible clinical decisions should be made based on these screening results alone. If definitive diagnosis is desired, chorionic villus sampling or amniocentesis would be necessary. In some cases, other testing may also be necessary. Some rare chromosomal aneuploidies may only occur in mosaic form. Clinical consequences depend on the chromosome involved and cannot be predicted prenatally.

Consult your health care provider for more information about your results and what they may mean for your pregnancy, what options you will have for further testing, and whether additional testing is recommended for you based on your clinical history.

TEST PROCEDURE: A tube of your blood will be drawn and sent to Verinata Health, Inc., a wholly owned subsidiary of Illumina, Inc., which will then analyze your blood.

PHYSICAL RISKS: Side effects of having blood drawn are uncommon, but may include dizziness, fainting, soreness, bleeding, bruising, and, rarely, infection.

DISCRIMINATION RISKS: Genetic information could be used as a basis of discrimination. To address concerns regarding possible health insurance and employment discrimination, some countries, U.S. states, and the U.S. government have enacted laws to prohibit genetic discrimination in those circumstances. The laws may not protect against genetic discrimination in other circumstances, such as when applying for life insurance or long-term disability insurance. Talk to your health care provider or genetic counselor if you have concerns about genetic discrimination prior to testing.

PREGNANCY OUTCOME INFORMATION: Collecting information on your pregnancy after testing is part of a laboratory's standard practice for quality purposes and is required in several states. As such, Illumina or its designee may contact your health care provider to obtain this information. By executing this informed consent, you agree to allow your health care provider to provide this information to Illumina or its designee.

SECONDARY FINDINGS: In the course of performing the analysis for the indicated tests, information regarding other chromosomal alterations, also known as "secondary findings" may become evident. Our policy is to NOT REPORT on any secondary findings that may be noted in the course of analyzing the test data.

PRIVACY: Test results are kept confidential. Your test results will only be released in connection with the testing service, to your health care provider, his or her designee, other health care providers involved in your medical care, or to another health care provider as directed by you (or a person legally authorized to act on your behalf) in writing, or otherwise as required or authorized by applicable law.

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CROSS-BORDER DATA TRANSFER: If you are from outside the United States, your specimen and associated health information will be sent to the United States in order for the testing to be completed. As part of the testing, additional health information about you will be created and maintained. Your country may consider the legal privacy protections in the United States to be inadequate.

USE OF INFORMATION AND LEFTOVER SPECIMENS FOR RESEARCH: Eurofins NTD, LLC performs research to help develop and provide safe and effective screening tests and to contribute to advancing biomedical knowledge. Your sample will be discarded within sixty days after taken, unless you specifically give consent. Permission to allow the use of your de-identified sample in research and development studies is entirely voluntary.

TEST RESULTS: Your test results will be sent to the health care provider.

PATIENT CONSENT: By signing this form, I, the patient having this screening performed, acknowledge that: (i) I have been offered the opportunity to ask questions and discuss with my health care provider the benefits, risks, and limitations of the test to be performed; (ii) I have discussed the test limitations (reliability of positive and negative test results; the predictive value of the test results; and that the test is not a diagnostic test, but a screening test and is not definitive) with the health care provider who ordered the test; (iii) I have been informed about the availability and importance of genetic counseling and have been provided with information identifying an appropriate health care provider from whom I might obtain such counseling; (iv) I have received, read, and understood the Patient Informed Consent in its entirety and that I may retain a copy for my records (v) I consent to having this test performed; and (vi) I will discuss the results and appropriate medical management with my health care provider.

Patient Signature: **Date:**

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During the actual use of this form, cover page need not be printed.

Disclaimer:
This test was developed by, and its performance characteristics were determined by Verinata Health, Inc., a wholly-owned subsidiary of Illumina, Inc., a CLIA-certified and CAP-accredited clinical testing laboratory. It has not been cleared or approved by the U.S. Food and Drug Administration.

Test Requisition Instructions

Complete Physician Information, Patient Information and Clinical Information sections. Be sure to check off the specific Test Request.

Specimen Labels – Preprinted with the requisition number. Please enter the patients last and first names EXACTLY as they appear on the requisition form. Affix the label to the patient specimen. Please complete the date drawn and drawn-by fields.

Billing Information – Provide a photocopy of the front and back of insurance card or print the information in the required fields. Please provide credit card information to cover tests ordered requiring additional charges.

Special handling needs between time of collection and time received by laboratory

Do not freeze specimens. Label all specimen tubes. Close shipping canisters tightly. Ship specimens within 24 hours via FedEx (priority overnight and Saturday delivery). Transport at room temperature. Refrigerate specimens if delayed before shipping.

Test Requisition

NTD | Eurofins Clinical Diagnostics

60 Ruland Rd. Ste. #1, Melville, NY 11747
www.ntd-eurofins.com | 1-866-NTD-LABS (683-5227)

Verifi™ Prenatal Test

Physician Information

Ordering Physician	Ordering Physician Signature	Physician Code
Referring OB/Gyn	Referring Ob/Gyn Phone	

Patient Information

Last Name	First Name	Date of Birth ____/____/____	Medical Record #
Address	City	State	Zip
Phone	email		

Clinical Information

Gestational age: Weeks: Days:	As estimated on: ____/____/____	DATING METHOD (Must choose one): ☐ LMP ☐ Date of Implantation ☐ CRL ☐ Other Specify: ____	Age of egg donor: ____
Maternal Height: ☐cm or ☐ft in	Maternal Weight: ☐kgs or ☐lbs		

TEST INDICATIONS (Choose at least one):
☐ Advanced maternal age (≥35 years) ☐ Positive serum screen ☐ Abnormal ultrasound
☐ High suggestive of increased risk for the specified chromosome aneuploidies ☐ Low risk/maternal anxiety ☐ Other

Comments: ____

Test Request

☐ **Verifi™ Prenatal Test for Singleton Pregnancy** for chromosomes 21, 18, 13 (≥10w0d)
☐ Sex chromosome aneuploidies

Verifi™ Plus Prenatal Test for Singleton Pregnancy for chromosomes 21, 18, 13 and additional tests as selected below (≥10w0d)
☐ Expanded autosomal trisomies* (all chromosomes including sex chromosome aneuploidies)
☐ Microdeletion panel* [22q11 (DiGeorge), 15q11 (Angelman/Prader-Will), 1p36, 4p-(Wolf-Hirschhorn), 5p-(Cri-du-chat)]
☐ Sex chromosome aneuploidies
*Additional cost for this test option, please complete the credit card info. section below.

☐ **Verifi™ Prenatal Test for Twin Pregnancy** for chromosomes 21, 18, 13(≥10w0d)
☐ Presence of Y chromosome

Patient Consent for Research

Eurofins NTD, LLC performs research to help develop and provide safe and effective screening tests and to contribute to advancing biomedical knowledge. My sample will be discarded within sixty days after taken, unless I specifically consent below. Permission to allow the use of my de-identified sample in research and development studies is entirely voluntary.

☐ I give permission for Eurofins NTD, LLC to retain any remaining de-identified sample for future research and development.
☐ I do not give permission to use the remaining sample in any research studies.

Patient Signature_____ Date ____/____/____

Billing Information

ICD Code(s): _____

Please Attach a Copy of The Front and Back of the Patient's Insurance Card or Provide Information Below

Insurance Company	Plan Name	Group #
Subscriber's Last Name, First Name	Insurance ID#	Referral Authorization #
Insurance Claims Address	Secondary Insurance Information	

I authorize Eurofins NTD, LLC to obtain and release relevant medical and other information and to directly bill and submit claims to Medicare, Medicaid, Medicare Supplemental and/or insurance providers ("Insurance") for laboratory medical services that Eurofins NTD, Inc. provides. I assign insurance benefits to NTD Labs and acknowledge that charges that are not covered by Insurance, including any applicable co-payments, deductibles, co-insurance, non-covered charges, and charges due to no authorization are my responsibility and I agree to pay for such charges.

Patient Signature_____ Date ____/____/____

Credit Card Information

Credit Card No.	Expiration ____/____	CVV	Authorized Amount: $
☐MasterCard ☐Visa ☐American Express ☐Other:	Patient Signature (required)		

Signature of Credit Card Holder (if different than patient) _____ Date ____/____/____

Specimen Labeling

Sample Type: Streck Cell Free DNA BCT (Beige/Black Top Tube) Date Drawn ____/____/____ Drawn By _____

NTD Labs Use Only

Enter patient's name on specimen identification label EXACTLY as it appears on the Requisition Form below.
Peel off label and affix to the blood tube.

NTD-61131-

EMR Ask at Order Entry (AOE) Questions:

Test ID	Question ID	Description	Type	Required
CFDNA1	TESTXY	Test For Sex Chromosome Anomalies • No • Yes	Answer List	NO
CFDNA1	TESTOTH	Test For Other Chromosomes • No • Yes	Answer List	NO
CFDNA1	TESTMCD	Test for Microdeletions • No • Yes	Answer List	NO
CFDNA1	TESTTWINY	If Twins, Test for Presence of Y Chromosome • No • Yes	Answer List	NO
CFDNA1	TESTIND1	Test Indication • Advanced Maternal Age • Positive Serum Screen • Abnormal Ultrasound • Hx Suggestive of increased risk for the specified chromosome abnormalities • Low Risk Maternal Anxiety • Other	Answer List	YES
CFDNA1	TESTINDOTH	Other Test Indications (Describe)	Plain text	YES
CFDNA1	GA	Gestational Age Weeks/Days	Plain text	YES
CFDNA1	GADATE	Date of Gestational Age Assessment	Plain text	YES
CFDNA1	MATWT	Maternal Weight (lbs)	Plain Text	NO
CFDNA1	MWLBSKGS	Units • LBS • KGS	Answer List	YES
CFDNA1	HGHT	Maternal Height (Ft.In)	Plain text	NO

EMR Result Codes:

Data Type	Code	LOINC	Name	Contains Result	Comments
CE	SUM	77011-5	Summary Result	Yes	
CE	CHR21	77012-3	Chromosome 21	Yes	Interpretation in NTE
CE	CHR13	77013-1	Chromosome 18	Yes	Interpretation in NTE
CE	CHR13	75977-9	Chromosome 13	Yes	Interpretation in NTE
CE	SEX	77011-5	Sex Chromosome	Yes	Included, if available, Interpretation in NTE
CE	CHRY	77011-5	Y Chromosome	Yes	Included, if available, Interpretation in NTE, For Twins Only
CE	CHROTH		All Other Autosomal	Yes	Included, if available, Interpretation in

			Chromosomes		NTE
CE	MCD		Microdeletion	Yes	Interpretation in NTE
NM	FFRAC		Fetal Fraction	Yes	Included, if available
CE	COM-C		Clinical Comments	Yes	Only displayed if comments are available
CE	COM-O		Other Comments	Yes	Only displayed if comments are available
CE	DGD		Demographic Data		Included if demographic data is available (contained in NTEs)
CE	NIPTMETH		Test Method		Test Method Listed in NTEs
CE	PERF		Prenatal Test Performance Data		Performance Data listed in NTEs
CE	NIPTLIM		Limitations of Test		Limitations of Test Listed in NTEs
CE	FTR		FOOTER		Only displayed if footer is available
CE	NOT		NOTIFICATION		Included for Unsatisfactory Specimens Only

Example Report

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80 Ruland Rd, Suite 1 • Melville, NY • 11747 • (855) 754-6221 • Fax (631) 425-0864 • reporting@ntd-eurofins.com

verifi® from NTD Labs

Physician ID #: 9999
Physician Tel #: (999) 999-9999
OB/GYN SPECIALISTS
SUIT 100
SOMEWHERE, US, 99999

Patient Name: DOE, JANE
Client ID #: 1234567
Patient ID #: 18SE5999999
Date of Birth: 09/07/71
Draw Date: 09/07/15
Date Received: 09/09/15
Report Date: 09/22/15

verifi® from NTD Labs was performed at:

Illumina, Inc. 600 Saginaw Drive, Redwood City, CA 94063

See attached report.

Jonathan B. Carmichael, Ph.D
Laboratory Director,
Eurofins NTD, LLC

Terrence W. Hallahan, Ph.D
Laboratory Director,
Eurofins NTD, LLC

FAX: 9999999999

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This report was generated on: 09/22/2015 03:24:23 PM

Verifi Plus™ prenatal screening report

Verifi Plus™ Prenatal Test

REPORT RELEASED
Date: 09/22/15 Time: 08:45 AM

PROVIDER INFORMATION
Eurofins NTD, Inc
Attn: Terrence Hallahan, Ph.D.
80 Ruland Road
Melville, NY 11747
Phone: (888) 754-5221
Fax: (631) 425-0864

SECOND RECIPIENT

PATIENT INFORMATION
Name: Jane Doe
DOB: 09/07/1971
GA: XXXXXXXX
Indication: XXXXXXXX
Medical record/patient ID: XXXXXXXX

SAMPLE INFORMATION
Client Sample ID: 1234567
Order ID: 1234567
Date of Draw: 09/07/15
Date Received: 09/22/15
Pregnancy Type: Singleton

ANEUPLOIDY DETECTED

RESULTS SUMMARY:

CHROMOSOME	RESULTS	PPV (%)
Chromosome 21	POSITIVE: Aneuploidy detected Results consistent with pregnancy at increased risk for trisomy 21.	XX
Chromosome 18	NEGATIVE: No aneuploidy detected Results consistent with two copies of chromosome 18.	
Chromosome 13	NEGATIVE: No aneuploidy detected Results consistent with two copies of chromosome 13.	
All Other Autosomal Chromosomes	NEGATIVE: No aneuploidy detected Results consistent with two copies of all other autosomes.	NA*
Sex Chromosomes	POSITIVE: Aneuploidy detected Results consistent with pregnancy at increased risk for XO (monosomy X), XXX, XXY, XYY.	NA**
Microdeletions (1p36, 4p16.3, 5p15.2, 15q11.2, 22q11.2)	POSITIVE: Abnormality detected Results consistent with a microdeletion in the 22q11.2 region. NEGATIVE: No aneuploidy detected Results consistent with no microdeletions detected in the regions of 1p36, 4p16.3, 5p15.2, 15q11.2, 22q11.2	NA***

CLINICAL COMMENTS: This is a screening test; therefore, false positive and false negative results can occur. Results may be reflective of fetal, placental, or maternal conditions. No irreversible clinical decisions should be made based on these screening results alone. Clinical correlation is indicated. If definitive diagnosis is desired, chorionic villus sampling or amniocentesis would be necessary. Genetic counseling is recommended. The fetal fraction (FF) is estimated to be 23%. FF estimation is one component of the Verifi Plus™ algorithm and is combined with other quality metrics to determine the confidence in the results. The FF estimate is not used in isolation to exclude samples.

Positive predictive value (PPV) is calculated based on stated performance, maternal and gestational age as provided on the Test Requisition Form (TRF). Other factors may impact the patient specific PPV. For more information about PPV please visit us at: www.illumina.com/ppv.

*Aneuploidies involving chromosomes other than 21, 13, 18, X, or Y are rare, and prevalence is not available, which precludes accurate calculation of PPV.
**Performance data for sex chromosome aneuploidy is limited, precluding accurate calculation of PPV.
***Performance data for microdeletion analysis is limited, precluding accurate calculation of PPV.

OTHER COMMENTS: Verifi Plus™ comments will be in this section. Lorem ipsum dolor sit amet, ad dicat repudiare ius, est ridens oportest definiebas te, odio munere possit an vel. Velit legere vim eu, vix maiestatis reprehendunt ei, eripuit blandit detracto eos at. Elit legere vim eu, vix maiestatis reprehendunt ei, eripuit blandit detracto eos a dolor consetetur disseritat usu, an mei aliquam reformidans.

PERFORMANCE AND LIMITATIONS

LIMITATIONS OF THE TEST: The Verifi Plus™ Prenatal Test is validated for aneuploidy of any chromosome, including 21, 13, 18, X, and Y and for specific deletions in chromosomal regions: 1p36, 4p16.3, 5p15.2, 15q11.2, 22q11.2, in singleton pregnancies, with gestational age of at least 10 weeks 0 days. This is a screening test that looks only for specific chromosomal abnormalities. A normal result does not eliminate the possibility that the pregnancy is associated with other chromosomal or subchromosomal abnormalities, birth defects, genetic conditions, or other conditions, such as open neural tube defects or autism.

There is a small possibility that the test results might not reflect the chromosomes of the fetus, but may reflect chromosomal changes of the placenta (confined placental mosaicism, CPM) or of you (maternal chromosomal abnormalities). Examples include maternal XXX, sex chromosome status, or benign and malignant maternal neoplasm. CPM may be associated with a higher chance for pregnancy complications or for uniparental disomy (UPD), which may affect the growth and development of the fetus. Some of these rare chromosomal aneuploidies may only occur in mosaic form. Clinical consequences depend on the chromosome involved and can not be predicted prenatally. This test, like many tests, have limitations, including false negative and false positive results. A negative test result does not eliminate the possibility of chromosomal abnormalities for the tested chromosomes or microdeletions. See performance metrics for test performance.

PERFORMANCE METRICS:†

Chromosome	N	Sensitivity	95% CI	Specificity	95% CI	Accuracy	95% CI
21	500	99.9% (50/50)	95.0 – 100.0	99.8% (450/451)	99.7 – 100.0	–	–
18	501	97.4% (37/38)	86.2 – 99.9	99.8% (461/463)	99.5 – 100.0	–	–
13	501	97.5% (39/40)	86.7 – 99.5	99.8% (460/460)	99.2 – 100.0	–	–
Chromosome	**N**	**Sensitivity**	**95% CI**	**Specificity**	**95% CI**	**Accuracy**	**95% CI**
Monosomy X	500	95% (19/20)	75.1-99.9	99.0% (480/485)	97.6-99.7	–	–
XX	500	97.6% (243/249)	94.8-99.1	99.0% (247/251)	97.2-99.9	98.20%	96.9-99.0
XY	500	99.1% (227/229)	96.9-99.9	99.6% (270/271)	98.0-99.9	99.00%	97.7-99.7
XXX/XXY/XYY	Other sex aneuploidies will be reported if detected. (Limited data of these more rare aneuploidies preclude performance calculations)						
Microdeletions & other autosomal aneuploidies	Microdeletions and other autosomal aneuploidies if requested and detected will be reported. (Limited data of these more rare abnormalities preclude performance calculations)						

†Data on file at Illumina, Inc. regarding Performance and Method Comparison studies

TEST METHOD: Nucleic Acid extraction, DNA sequencing, and analysis of sequencing results to determine fetal aneuploidy.

DISCLAIMER: The manner in which this information is used to guide patient care is the responsibility of the health care provider, including advising for the need for genetic counseling or diagnostic testing. Any test should be interpreted in the context of all available clinical findings.

DISCLOSURE: The Verifi Plus test was developed by, and its performance characteristics were determined by Verinata Health, Inc. a wholly owned subsidiary of Illumina, Inc. The VHI laboratory is CAP-accredited and certified under the Clinical Laboratory Improvement Amendments (CLIA) as qualified to perform high complexity clinical laboratory testing. The verifi test has not been cleared or approved by the U.S. Food and Drug Administration.

This prenatal test is performed by Verinata Health, Inc., a wholly owned subsidiary of Illumina, Inc.
Illumina, Inc., 500 Sleginaw Drive, Redwood City, CA 94063 1-866-366-6653
CAP: 7519312 CLIA:05D2013691 California License #: CLP00340177
Laboratory Directors: Meredith Hallie Miller, MD, William K. Seltzer, PhD, FACMG, Eileen Da Fleo, PhD, Bell Sanderson

illumina

Physician Information Brochure

Patient Information Brochure

What is Verifi™?

Verifi™ is a simple blood test that screens for the most common chromosomal abnormalities that can affect your baby's future health. A sample can be drawn in your doctor's office as early as the 10th week of pregnancy. Verifi™ is available for both singleton and twin pregnancies.*

What does Verifi™ screen for?

Verifi™ looks for too few or too many copies of chromosomes. Missing or extra copies of chromosomes are called "aneuploidies" and are often associated with intellectual or physical disabilities, with different levels of severity.

The most commonly seen aneuploidies in pregnancy include trisomy 21 (Down syndrome), trisomy 18 (Edwards syndrome), and trisomy 13 (Patau syndrome), all of which can be accurately detected with Verifi™.

If you and your healthcare provider chooses, Verifi™ can analyze sex chromosomes in order to tell you the gender of your baby and identify sex chromosome abnormalities.

* The Verifi™ test for chromosomes 21, 18, and 13, is available for singleton and twin pregnancies. Sex chromosomes aneuploidy testing is available for singleton pregnancies only. An optional test for twin pregnancies tests for the presence of the Y chromosome.

About Eurofins NTD

For more than 30 years, Eurofins NTD has pioneered the research and development of prenatal screening protocols for Open Neural Tube Defects, Down syndrome, trisomy 18 and trisomy 13. Today, Eurofins NTD serves universities, medical centers, hospitals, laboratories, obstetricians and maternal fetal medicine specialists worldwide—providing risk assessment services that help healthcare professionals and patients make more informed decisions.

To learn more about Verifi™, please speak with your healthcare provider, or call us at 1-888-NTD-LABS (683-5227).

References

1. Bianchi DW, Platt LD, Goldberg JD, *et al.* Genome-wide fetal aneuploidy detection by maternal plasma DNA sequencing. *Obstet Gynecol.* 2012;119:890–901.

2. Futch T, Spinosa J, Bhatt S, de Feo E, Rava RP, Sehnert AJ. Initial clinical laboratory experience in noninvasive prenatal testing for fetal aneuploidy from maternal plasma DNA samples. *Prenat Diagn.* 2013;33:569–74.

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Verifi™ Prenatal Test

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How does the test work?

A sample of your blood is drawn and the genetic material (DNA) from you and your baby is tested.

Verifi™ takes a deeper approach to the science, using an advanced technology called "Whole Genome Sequencing" to analyze millions of DNA fragments per sample and accurately count the number of chromosomes present.

Is Verifi™ right for me?

This screening test is usually offered to pregnant women who have a confirmed singleton or twin pregnancy of at least 10 weeks gestational age, and meet any of the following criteria:

- You are considered to be of advanced maternal age at time of delivery (35 years or older for a singleton pregnancy or 32 years or older for a twin pregnancy)
- You have an abnormal or "positive" serum screen
- Your ultrasound shows concerns or abnormalities with your baby's growth and/or development
- You have a personal or family history suggestive of trisomies 21, 18, 13, or other sex chromosome abnormalities

How quickly will I get my results?

Your results will be sent to your healthcare provider, who will usually receive them within one week.

What do my test results mean?

Your results will tell your healthcare provider whether or not trisomies 21, 18, 13, or sex chromosome abnormalities (if ordered) are likely to be present in your pregnancy. In the case of a positive result, your healthcare provider will discuss what the results mean to your pregnancy, as well as further testing options to consider.

If the sex chromosome option is ordered, results will be reported as either No Aneuploidy Detected or Aneuploidy Detected.

How do I know I can trust Verifi™ to be effective?

The performance of Verifi™ was evaluated in a major scientific study in which more than 60 leading U.S. medical research and teaching institutions participated. The study findings were reviewed and published in the leading journal read by obstetricians and gynecologists.[1] A second study, published subsequently, presented the test's performance under regular clinical conditions and found similar results.[2]

What is Verifi™ Plus?

The Verifi™ Plus for singleton pregnancies tests for chromosomes 21, 18, 13 and additional tests that you and your healthcare provider may choose to select, as shown below:

- Sex chromosome aneuploidies (monosomy X, XXX, XXY, and XYY) are included if requested; fetal sex (XX or XY) will be reported if no sex chromosome aneuploidy is detected.
- Aneuploidy (trisomy) of all chromosomes, including sex chromosome aneuploidies.
- Select microdeletions such as 1p36 deletion, 4p- (Wolf-Hirschhorn syndrome), 5p- (cri-du-chat syndrome), 15q11.2 (Prader-Willi syndrome/ Angelman syndrome), and 22q11.2 deletion (DiGeorge).

Do normal Verifi™ test results mean that my baby will be perfectly healthy?

Verifi™ is a highly accurate non-invasive screening test. No test, however, can guarantee a baby will not have any medical issues.

Verifi™ addresses only aneuploidies of chromosomes 21, 18, 13, and sex chromosomes* (if ordered). It does not test for or report all genetic and non-genetic problems that may be present in a baby. If the test result is No Aneuploidy Detected, indicating a negative result, it does not completely rule out all potential problems with chromosomes 21, 18, and 13, or all sex chromosome aneuploidies in your baby.

Genetic counseling before and after testing is recommended. If result is 'Aneuploidy Detected' you're considered positive. Women who receive this result should be offered invasive prenatal procedures for confirmation. A negative test does not ensure an unaffected pregnancy.

* Sex chromosomes aneuploidy testing is available for singleton pregnancies only.

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