



**Tools For Instituting
Non-Invasive Prenatal Testing
in Your Obstetric, Midwifery
or Family Practice**

Introduction

The advent of Non-Invasive Prenatal Testing (NIPT) using cell-free fetal DNA drastically changes the implications an abnormal screening result has regarding a developing fetus.

NIPT is a screening test that can indicate a very strong likelihood that a woman's pregnancy is affected with aneuploidy, with a low false positive rate.

Education and informed consent are crucial aspects of appropriate NIPT utilization. While we recommend this testing be coordinated through a genetic counselor when possible, these services may not be accessible to all women who request this test. Thorough counseling by a qualified prenatal provider is essential.

This toolkit is intended to help your office design and implement an NIPT protocol that will allow for excellent patient care.

ACOG Committee Opinion

Noninvasive Prenatal Testing for Fetal Aneuploidy

Number 545, December 2012

Patients at increased risk based on the following criteria for aneuploidy can be offered this testing:

- Maternal age 35 or older at delivery
- Ultrasound findings (ie: major structural anomaly, soft markers...)
- History of a prior pregnancy with a trisomy
- Other positive screening test
- Parental balanced translocation increasing risk for tested aneuploidy

ACOG Committee Opinion

- NIPT should not be part of routine prenatal labs
- NIPT should not currently be offered to low-risk women or women with multiple gestations as it has not been sufficiently evaluated
- Pretest counseling should discuss that this is a screening test has high sensitivity and specificity. It only tests for common chromosome abnormalities and cannot test for all genetic diseases
- A detailed family history should still be obtained
- Invasive testing should be offered for structural anomalies
- Negative NIPT results do not ensure an unaffected pregnancy
- Genetic counseling is recommended for positive results along with a confirmation with invasive testing
- NIPT does not replace CVS or amniocentesis

NIPT Fact Sheet

Please review this NIPT Fact Sheet developed by the National Coalition for Health Professional Education in Genetics and the National Society of Genetic Counselors:

http://www.nchpeg.org/index.php?option=com_content&view=article&id=384&Itemid=255

This document will be modified over time as more conditions are added to this testing platform

Choosing a Lab

NIPT technologies are relatively new, and only a few labs are currently offering testing. When choosing a lab, please consider the following:

- ✓ Technology used by lab
- ✓ Eligibility requirements
- ✓ Validation data/peer reviewed publications
- ✓ How results near the cut-off are reported
- ✓ Availability of sample reports
- ✓ Patient information brochures
- ✓ Cost
- ✓ Financial support for patients
- ✓ Customer service
- ✓ Availability of genetic counseling services

If you have specific questions please consider discussing your options with the MFM group or genetic counselor with whom you work most closely

NIPT Protocol

- We recommend that in your practice setting, the group should agree on specific indications for testing, who will perform informed consent, how blood samples will be drawn and sent, and how disclosure of results will be handled.
- All individuals involved in the process should have formal education regarding the technology and office policies

Patient Education Materials

- To inform patients about the availability of this test, most practices will provide some type of educational flyer or brochure
 - In the waiting room
 - As part of a pregnancy packet
 - At the first intake visit
- Your practice may choose to use a brochure provided by the lab, but you may also choose to design your own or modify the brochure found in the resource section

Pretest Counseling

As part of informed consent, the following should be discussed with all patients:

- Screening & diagnostic testing is *optional*
- The purpose of screening
- Current options including the sensitivity and specificity of each test
- An accurate, unbiased, up-to-date description of the conditions for which screening is performed

*This information will continue to evolve as more conditions are added to NIPT platforms

Questions For Your Patient To Consider

What will I do if I have a screen positive result?

What will I do if I have an abnormal CVS or amniocentesis result?

What will I do if I have a false negative result?

How do I feel about having a child with a chromosome difference or birth defect?

Educating Yourself About Aneuploidy

www.ndss.org

www.nwdsa.org

www.trisomy.org

www.turnersyndrome.org

www.genetic.org (47,XXY, 47,XXX and 47, XYY)

Consent Document

- To illustrate the implications of a positive (abnormal) result, many practices choose to ask their patients to sign a consent indicating if they accept or decline any optional screening test
- A formal consent process that includes a signature may help reduce accidental and undesired screening

Disclosing Results

- Having a consistent resulting plan may be the most important part of an NIPT program
- Given the complexity of the testing and results, even normal results should be disclosed by a medical professional designated to review this information
- Abnormal or 'no call' results should be disclosed by the primary prenatal provider

Normal Results

- Try to speak with patient personally instead of leaving a message
- Review that normal results “reduce” but do not “eliminate” risk for tested conditions
- Be able to discuss alternative testing options, such as amniocentesis or CVS
- Have contact information for a genetic counselor on hand in case the patient desires more information

'No Call' Results

- Be aware of the 'unreportable' and 'no call' specifications of your chosen laboratory
- As many as 5% of women who choose NIPT will receive a 'no call' result, typically due to a low fetal fraction of DNA. This may be more common in patients with a higher BMI
- Each laboratory has their own recommendations regarding redraws
- Be prepared to discuss alternate screening or diagnostic testing options

Aneuploidy Suspected

- Some laboratories may report a result as 'aneuploidy suspected' if a value falls near the z-score cut off. This means that the risk for aneuploidy is higher than expected, but not 98%
- This result should be treated as a screen positive, with the chance for aneuploidy most likely between 40-80%

Abnormal Results

- Review condition using resources provided in this toolkit to be prepared to discuss up to date information about the likely diagnosis
- Think about wording/vocabulary ahead of time
- Speak with patient directly on telephone
- Offer to meet in person to review
- Recommend CVS or amniocentesis to confirm diagnosis
- With these results, there is a greater than 98% chance the baby has a particular condition

NSGC Recommendations For Disclosing Abnormal Results

Tell the parents about the diagnosis as soon as possible, even if the diagnosis is suspected but not yet confirmed.

The family should be informed of the diagnosis in their preferred language. If possible, a professional medical interpreter should be present at the time of disclosure.

Discuss the diagnosis in a private, comfortable setting, free from interruptions. Allow time for questions and make plans for a follow-up conversation.

Parents should be provided with accurate and up-to-date information. Information should be given with a balanced perspective, including both positive aspects and challenges related to the diagnosis.

Provide the information in a sensitive and caring, yet confident and straightforward manner, using understandable language that is clear and concise.

Use neutral language and avoid using value judgments when starting the conversation, such as “I’m sorry” or “Unfortunately, I have bad news”.

Use sensitive language and avoid outdated or offensive terminology. Use person-centric language, emphasizing that this is a baby who has Down syndrome, rather than a “Downs baby” or a “Down syndrome child.”

Allow time for silence and time for tears. Do not feel that you need to talk to “fill the silence”. Offer the family time alone.

Informational resources should be provided, including contact information for local and national support groups, up-to-date printed information or fact sheets, and books. The opportunity to meet with families who are raising a child with Down syndrome, those who have chosen to create an adoption plan, and/or those who have terminated a pregnancy should be offered. When appropriate, referrals to other specialists may also be helpful (e.g., medical geneticists, genetic counselors, cardiologists, neonatologists, etc.).

Taken from: Sheets et al. J Genet Couns (2011)

Resources For Patients

www.ndss.org

www.nwdsa.org

www.trisomy.org

www.turnersyndrome.org

www.genetic.org (47,XXY, 47,XXX and 47, XYY)

Resources For Patients

- Make sure you have the contact information for a genetic counselor or MFM practice with whom you have a relationship to facilitate urgent referrals
- Most patients express that having immediate access to appropriate web sites, support groups and personal contacts is important
- You may find it helpful to reach out to a Down syndrome support group in your area and provide patients with their contact information

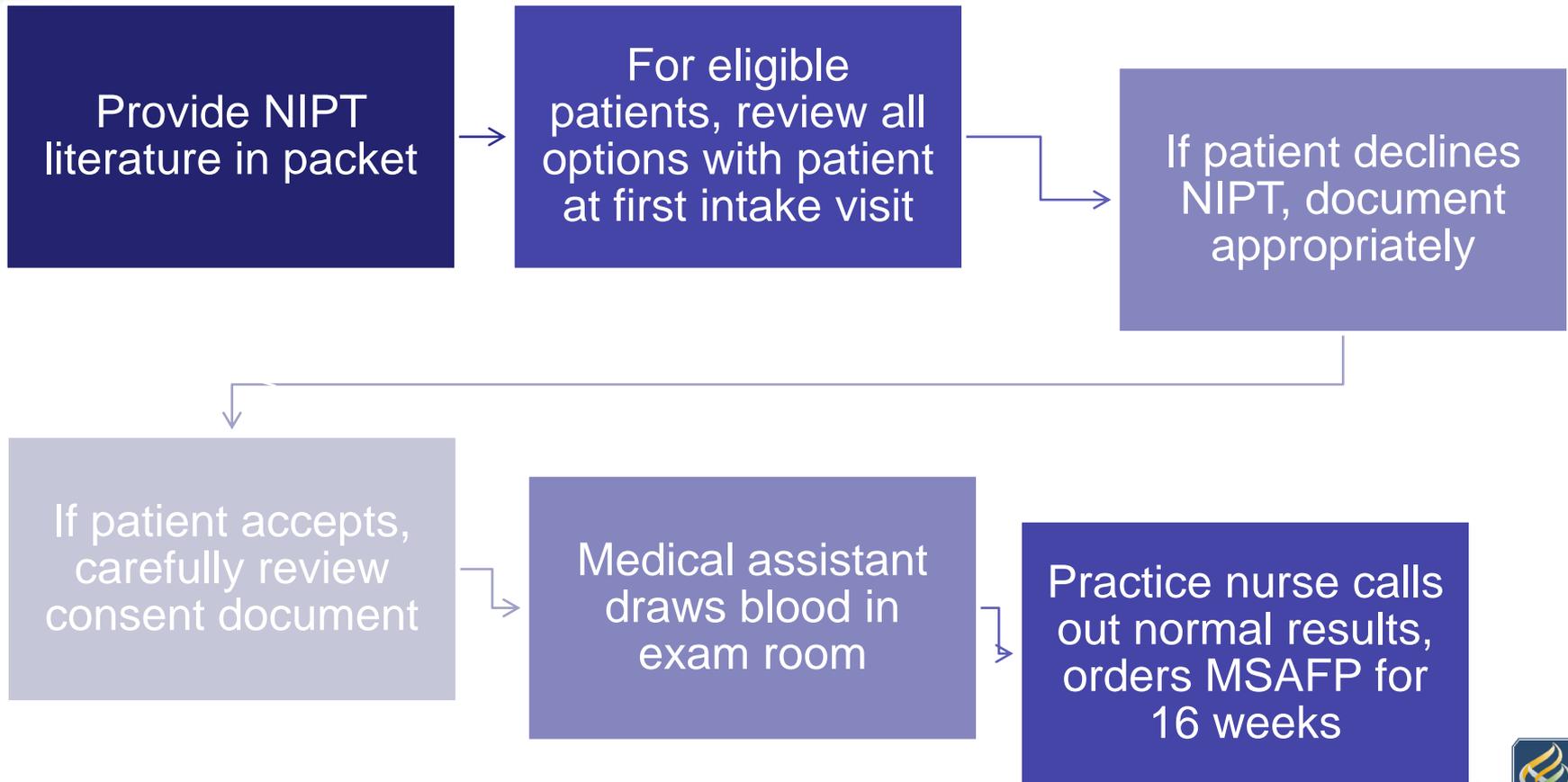
Logistics

- Currently, most NIPT laboratories are not affiliated with reference labs except Integrated Genetics
- Kits and supplies will need to be ordered directly from the lab
- Blood will likely need to be drawn in the office, as most practices choose to have the test billed for by the performing lab
- NIPT is covered by most insurances depending on the indication
- Even if you have the option of using a phlebotomy service or reference lab, you may choose to have this test drawn separately to avoid unintentional testing

Other Recommended Tests

- At this time, it is unclear if how nuchal translucency measurement and NIPT will co-exist. If NT ultrasound is available to your patients, it should still be considered
- MSAFP should be considered for open neural tube defect screening
- Anatomy ultrasound should still be offered
- CVS and amniocentesis should still be available to high-risk patients with normal NIPT
- If a family is at high risk for hereditary conditions or other aneuploidies not screened for with NIPT, they should have access to genetic counseling

NIPT Testing Flowsheet: Ex. 1



NIPT Testing Flowsheet: Ex. 2

