Genetic Insights: quick reference guide for healthcare providers

This guide is intended to facilitate discussion between a provider and their patient.

Genetic Insights test results: **Familial thoracic aortic aneurysm and dissection**

Key results

A pathogenic or likely pathogenic variant associated with familial thoracic aortic aneurysm and dissection (FTAAD) was found in the *ACTA2* gene.

People with FTAAD have a significantly increased risk of developing a thoracic aortic aneurysm and/or dissection.

Next steps

Clinical recommendations	Resources
Genetic Insights is a screening test and not intended for diagnosis. A follow-up genetic test should be performed in a clinical setting before any other action is taken.	**Ready to order?** Check with your institution and/or patient's insurance about the preferred testing laboratory. Blueprint Genetics® offers FTAAD testing. To confirm this test result, **targeted variant testing** for the variant identified is available. You can order a confirmation test here: Blueprint Genetics/TVT **Have questions?** Call **1.866.GENE.INFO** (1.866.436.3463) to speak to a specialized Quest genetic counselor or geneticist available to healthcare providers to discuss test selection and results.
Refer your patient to a genetic counselor. *Genetic counselors can provide counseling on the implications of this test result and next steps for your patient.*	Your patient can schedule a 1-on-1 remote genetic counseling session through their online Genetic Insights Connective Tissue Disorder Report at no additional cost. To find a genetic counselor with expertise in connective tissue disorder genetics practicing in your patient's area for an in-person session, please visit FindAGeneticCounselor.NSGC.org

Patient conversation starters:

Patient conversation starters summarize the preceding information in plain language to support meaningful conversations between you and your patient.

FindAGeneticCounselor.NSGC.org

Your Genetic Insights test is a screening test. The next step is to have your result confirmed with a second genetic test.

It's also important that you talk with a genetic counselor. Genetic counselors are experts in genetics and can help you understand this result and potential next steps.

You can access a genetic counselor through your online Genetic Insights dashboard at no additional cost to you, and we can discuss a referral to a local genetic counselor.

Visit QuestDiagnostics.com/Genetic-Health-Screening for more information about this test.

What is FTAAD?

FTAAD is a hereditary connective tissue disorder that increases the risk of an aneurysm, dissection, and/or rupture of the thoracic aorta.[1,2]

While people with a DNA variant associated with FTAAD are at a significantly increased risk, not all will develop aortic disease.[2]

If aortic disease does develop, clinical presentation and age of onset is variable among individuals.[2]

Thoracic aortic aneurysms are often asymptomatic, and individuals may first present with an acute aortic dissection with high morbidity and mortality.[2,3]

FTAAD is best managed by a multidisciplinary expert team.[1]

See the Management options section for more detail.

Patient conversation starters:

Familial thoracic aortic aneurysm and dissection (or FTAAD) is caused by having a DNA variant in a certain gene.

FTAAD is a connective tissue disorder; that means the tissues that help connect our bodies together—like the blood vessels—can be affected.

People with FTAAD have a higher than typical chance of having a tear in a major blood vessel like the aorta. But not everyone with FTAAD will have a tear in a blood vessel.

People with FTAAD should see a specialist, including a geneticist, to help monitor for and prevent health issues.

What this result means for family members

There are 2 primary ways someone can have a DNA variant associated with FTAAD:

The DNA variant can be inherited from a biological parent. In this case, at least one parent has the same DNA variant. Each full sibling and each child of someone with the variant has a 50% chance of having the same variant.

The DNA variant can arise in someone for the first time (also called a de novo variant). In this case, their children have a 50% chance of having the variant. Neither biological parent nor any siblings are likely to have the variant.

In people with a confirmed DNA variant associated with FTAAD, genetic testing for family members may help inform their risks and screening protocols.[3] Therefore, it is strongly recommended that individuals share these results with their biological relatives.

Patient conversation starters:

FTAAD is caused by having a DNA variant in a certain gene.

There are 2 ways someone can end up having a DNA variant linked to FTAAD.

- First, it can be passed down from a parent. In this case, 1 parent would have that same DNA variant. Siblings would have a 50% chance (1 in 2 chance) of having the DNA variant
- Second, it is possible that the DNA variant happens in someone in a family for the first time. In this case, parents and siblings are not likely to have the DNA variant

However, in either case, each child of someone with a DNA variant linked to FTAAD has a 50% chance of having the same DNA variant.

Sharing this result with your family members is important so they can talk to a healthcare provider about genetic testing for FTAAD.

Management options

There are management and treatment options for people with FTAAD. Select clinical guidelines from the American College of Cardiology Foundation/American Heart Association[3] include:

Scenario	Option(s)
Screening	People with a confirmed genetic variant known to predispose to aortic aneurysms and dissections should undergo complete aortic imaging at initial diagnosis and 6 months thereafter to establish if enlargement is occurring
Surgical aneurysm repair	Surgical repair of the aorta should be considered at an aortic diameter based on clinical guidelines
Control of hypertension	Stringent control of hypertension, lipid profile optimization, smoking cessation, and other atherosclerosis risk-reduction measures may be considered
Pregnancy	Individuals considering pregnancy should be counseled about the risks. Optimal care includes involvement with a high-risk maternal-fetal team along with an aortic specialty team[3]

Patient conversation starters:

It's recommended that people with FTAAD make a plan to monitor their health. This way, any health problems can be found as early as possible, and a treatment plan can be made.

If your genetic test result is confirmed, it's important to work with the right specialists, including a geneticist, to make a plan that's right for you.

See the American College of Cardiology Foundation/American Heart Association[3] for complete recommendations. Guidelines and recommendations may change over time.

If this result is confirmed, a medical geneticist should be consulted for further clinical management. To locate a genetics center, please visit the American College of Medical Genetics and Genomics.

Additional resources

The following advocacy groups have additional information and resources about FTAAD:

The Marfan Foundation: Marfan.org
John Ritter Foundation: JohnRitterFoundation.org

References

1. Milewicz D and Regalado E. Heritable Thoracic Aortic Disease Overview. February 13, 2003. Updated December 14, 2017. In: Adam MP, Ardinger HH, Pagon RA, et al, editors. GeneReviews® [Internet]. University of Washington, Seattle; 1993-2022. https://www.ncbi.nlm.nih.gov/books/NBK1120
2. Regalado ES, Guo DC, et al. Aortic disease presentation and outcome associated with ACTA2 mutations. *Circ Cardiovasc Genet*. 2015;8(3):457-464. doi:10.1161/CIRCGENETICS.114.000943
3. Hiratzka LF, Bakris GL, et al. ACCF/AHA/AATS/ACR/ASA/SCA/SCAI/SIR/STS/SVM Guidelines for the diagnosis and management of patients with thoracic aortic disease. *Circulation*. 2010;121(13):e266-369. doi:10.1161/CIR.0b013e3181d4739e