**Letter of Medical Necessity for the Marfan/TAAD Sequencing and Deletion/Duplication Panel**

**Patient Information**

**Date:**

**Patient Name:**

**Patient DOB:**

**Insurance Company Name, Address, City, State:**

**Policy Number:**

**Group Number:**

**ICD10 Codes:**

**Test Information**

**Test Name:** Marfan/TAAD Sequencing and Deletion/Duplication Panel

**CPT Codes:** 81410x1, 81411x1

**Laboratory:**

GeneDx, Inc.

(NPI#1487632998 / TAXID#205446298 / CLIA#21D0969951)

207 Perry Parkway

Gaithersburg, MD 20877

Telephone: (301) 519-2100

Fax: (201) 421-2010

This letter is in regards to my patient, [FIRST NAME LAST NAME], to request full coverage for the Marfan/TAAD Sequencing and Deletion/Duplication Panel to be performed by GeneDx. It is my professional determination that testing is medically necessary and will have a direct impact on this patient’s treatment and management.

**Patient Clinical and Family History**

This testing is requested due to this patient’s personal medical history, which includes the following clinical findings:

* Add Phenotype
* Add Phenotype
* Add Phenotype

The patient’s family history is negative for related conditions / unknown / remarkable for the following related clinical features:

The patient has previously had the following uninformative genetic and other testing:

* Add test
* Add test
* Add test

**Clinical Evidence and Guidelines for Testing**

The Marfan/TAAD Sequencing and Del/Dup Panel includes germline analysis of genes that involve conditions including life-threatening aortic rupture and other complications such as loss of vision or severe and potentially lethal pulmonary or gastrointestinal effects. Panel testing includes both sequencing and deletion/duplication analysis of multiple genes simultaneously.

Familial thoracic aortic aneurysm and dissection (TAAD) is a genetically heterogeneous disorder that accounts for approximately 20% of all cases of thoracic aortic aneurysms and dissections.1 Thoracic aortic aneurysms are usually asymptomatic and enlarge over time. Undiagnosed or untreated thoracic aortic aneurysms can lead to life-threatening acute ascending aortic dissections. However, in a patient with a known genetic risk of TAAD, imaging, and surgical and pharmacological interventions can be utilized to reduce the risk of disease progression and death.

Syndromic TAAD includes Marfan syndrome due to variants in the *FBN1* gene, Loeys-Dietz syndrome due to variants in the *TGFBR1, TGFBR2, SMAD3, TGFB2*, or *TGFB3* genes, and Shprintzen-Goldberg syndrome due to variants in the *SKI1* gene.2-5 Vascular Ehlers-Danlos syndrome, arterial tortuosity syndrome, congenital contractural arachnodactyly and Lujan syndrome may also present with some features overlapping those of Marfan syndrome and Loeys-Dietz syndrome.6-9 Familial non-syndromic TAAD may be due to a pathogenic variant in one of the same genes that cause Marfan syndrome and LDS, or in one of a number of other genes, including *ACTA2, MAT2A, MFAP5, MYH11, MYLK,*  or *PRKG1*. Pathogenic variants in other genes included on this panel, such as *NOTCH122* and *SMAD423*, may have a distinct clinical presentation but are also associated with increased risk of aortopathy.

When syndromic features are absent, subtle, or non-specific (which is common), molecular diagnosis with genetic testing aids in diagnosis, management and establishing recurrence risk for family members.1

**Patient Clinical Utility and Medical Management Implications**

Medical management options for early detection or risk reduction are available for most genes on the Marfan/TAAD Sequencing and Del/Dup Panel. These options are based on clinical guidelines and peer reviewed literature, such as the 2010 American Heart Association Guidelines for the Diagnosis and Management of Patients with Thoracic Aortic Disease which states that individuals with a pathogenic variant in a gene associated with aortic aneurysm and/or dissection should undergo aortic imaging.10

In addition, accumulating data indicates that the genetic cause of TAAD, and in some cases the specific variant identified, can indicate the risk of a patient developing a thoracic aortic aneurysm and dissection, indications for surgical repair, and the risk for additional vascular disease and guidance for management.1 Thus, it is essential that an accurate diagnosis is established in order to determine appropriate medical management for this patient.

Specifically for this patient, the results of this test will also {ADD ADDITIONAL INFORMATION}

**Summary**

The Marfan/TAAD Sequencing and Deletion/Duplication Panel at GeneDx is a highly sensitive and cost-effective genetic test. I am requesting coverage for this medically necessary test in order to establish appropriate medical management for this patient. Without testing, treatment would be suboptimal, subjecting this patient to increased morbidity and potentially early mortality.

Thank you for your review and consideration. If you have questions, or if I can be of further assistance, please do not hesitate to call me at (XXX) XXX-XXXX.

Sincerely,

Signature

Ordering Provider’s Name

References:

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3. Loeys et al. (2010) The revised Ghent nosology for the Marfan syndrome. Journal Of Medical Genetics 47 (7): 476-85 (PMID: 20591885).
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5. Doyle et al. (2012) Mutations in the TGF-β repressor SKI cause Shprintzen-Goldberg syndrome with aortic aneurysm. Nature Genetics 44 (11): 1249-54 (PMID: 23023332).
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8. Godfrey M. Congenital Contractural Arachnodactyly. 2001 Jan 23 [Updated 2012 Feb 23]. In: Pagon RA, Adam MP, Ardinger HH, et al., editors. GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2015.
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