

Using Genetic Testing to Diagnose Atrial Septal Defect with Atrioventricular Block

Indications:

- Clinical diagnosis of ASD, in combination with at least one of the two following symptoms:
 - conduction delay (such as prolonged PR interval or AV node conduction delay or block)
 - family history of sudden cardiac death
- Unexplained AV block, especially in presence of family history of congenital heart disease
- Family history of ASD
- Family history *NKX2-5*-related congenital heart disease

Benefits:

Genetic testing for mutations in the gene *NKX2-5* can:

- confirm a diagnosis of ASD.
- alert patients and physicians to the risk of AV block later in life.
- determine which family members of an individual with a known *NKX2-5* mutation also harbor the mutation, facilitating early diagnosis and preventative treatment.

Background:

- Atrial Septal Defects (ASDs), which occur in approximately 1 in 1000 individuals, are characterized by an opening in the atrial septum that creates a connection between the two atria.¹
- If diagnosed early, ASDs can be effectively treated by surgical closure.^{1,2}
- Clinically significant ASDs are usually well tolerated in children and adolescents and may not be recognized until adulthood, after irreversible damage to the heart and lungs or a stroke caused by blood clots that arise from the venous circulation has already occurred.^{1,3}
- 8-19% of familial ASDs are associated with autosomal dominant mutations in the gene *NKX2-5*. Mutations in *NKX2-5* may also lead to AV block, often developing in adulthood.⁴
- The initial presenting symptoms of ASD with AV block may be related to either the ASD or the AV block.⁵

References: 1. Webb G, et al. (2006) *Circ.* 114:1645-1653. 2. Gruber PJ, et al. (2004) *Circ. Res.* 94:273-283. 3. Warnes CA, et al. (2001) *J. Am. Coll. Cardiol.* 41:2072-2076. 4. Hirayama-Yamada K, et al. (2005) *Am. J. Med. Genet.* 135A:47-52. 5. Smits JP, et al. (2005) *Europace* 7:122-137.

Ordering Information: please see other side

Ordering Information for Testing for Atrial Septal Defect with Atrioventricular Block

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Ordering Information

| Gene(s) | CPT Codes | Test Code |
|----------------------|---|-----------|
| <i>NKX2-5</i> | 83891(1) 83892(1) 83898(4) 83904(8) 83909(8) 83912(1) | 190401 |

Family Testing (single amplicon)

| | | |
|----------------------|---|--------|
| <i>NKX2-5</i> | 83891(1) 83892(1) 83898(1) 83904(2) 83909(2) 83912(1) | 190401 |
|----------------------|---|--------|

Test Methodology

- Amplification by polymerase chain reaction (PCR); sequencing of entire protein-coding region

Sample Requirements

- For blood samples:
 - 2 mL whole blood in EDTA tube (lavender top)
 - Samples can be stored briefly at 4°C, but should be shipped on day of collection.
- For buccal swab samples:
 - Please contact client services at 1-866-647-0735 for instructions.
- All sample types should be shipped overnight at room temperature.
- To request a sample shipping kit, please call 1-866-647-0735.

Turn-around Times

Turn-around times typically range from 7 to 21 days of receipt of sample and all required forms, but may vary depending on test volume and test-specific technical difficulties. Current TATs are posted on our website. Please schedule patient follow-up appointments for discussion of test results conservatively at 6 weeks.

For more information, please contact Correlagen Diagnostics, Inc., at 1-866-647-0735 or visit us on the web at www.correlagen.com.