ALPHA-1 ANTITRYPSIN DEFICIENCY AND HOW TO TEST - ONTARIO

What is Alpha-1 Antitrypsin Deficiency?[1]

Alpha-1 Antitrypsin Deficiency, also called Alpha-1, A1AD or AATD is a common hereditary disorder that can result in serious lung, liver or skin disease. Yet it has been estimated that more than 90% of cases remain undiagnosed.[2,3]

The role of Alpha-1 Antitrypsin (AAT) is to protect the body from inflammation by neutralizing proteases, especially in the lungs. In people with Alpha-1 Antitrypsin Deficiency (AATD), AAT aggregates in liver cells, or is released at a reduced level and cannot neutralize proteases effectively. Most commonly this leads to lung disease (i.e., COPD) but the build-up of AAT in the liver can also lead to liver disease. AATD can also lead to panniculitis, a skin disease, though this is not as common.

While it is important to know that not everyone who has AATD will develop symptoms, even people who are 'carriers' can develop symptoms. Early detection, treatment and lifestyle changes can make a dramatic difference in the progression of the disease.

AATD is diagnosed by routine blood tests. There is no cost for the tests to the Health Care Professional or patient.

Who Should be Tested for AATD?

The Canadian Thoracic Society (CTS) Guidelines[4]

The CTS recommends targeted testing of serum AAT levels in certain individuals. Testing for AAT Deficiency should be considered in the following:

1) Patients diagnosed with COPD, before 65 years of age or with a smoking history of <20 pack years
2) Individuals with a family history of AAT Deficiency, in conjunction with genetic counselling
3) Adult asthma patients with diagnostic uncertainty (i.e. persistent obstruction on lung function tests)

Additional Resources:

Grifols Canada	http://www.grifols.com
Canadian Thoracic Society	https://cts.lung.ca/
Alpha-1 Canada	https://alpha1canada.ca/healthcare-professionals/
AlphaNet Canada	http://www.alphanetcanada.ca/

REFERENCES:
1. Greene CM, et al. α-1 Antitrypsin deficiency. Nature Review. Disease Primer. 2016; 2:1-17. **2**. Campos MA, et al. Trends in the diagnosis of symptomatic patients with α1-antitrypsin deficiency between 1968-2003. Chest 2005;128:1179-1186. **3**. Silverman EK & RA Sandhaus. Alpha$_1$-antitrypsin deficiency. New Engl J Med 2009;360(26):2749-2757. **4**. Marciniuk DD, et al. Alpha-1 antitrypsin deficiency targeted testing and augmentation therapy: A Canadian Thoracic Society clinical practice guideline. Can Respir J 2012;19(2):109-116.

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STEP 1. Determine the level of AAT in serum

Use the standard MOHLTC Laboratory Requisition Request *"Alpha-1 Antitrypsin Serum Level"* in "Other Tests" at the bottom right of the form

AATD < 1.13 g/L*

AATD > 1.13 g/L

A level >1.13 g/L is considered **'normal'** and no further testing is required

A level <1.13 g/L is considered **low**; further confirmatory testing for deficiency alleles is indicated.
Proceed to Step 2.

STEP 2. Confirmatory Genetic Testing

Confirmatory genetic testing may be requested 2 different ways:

LifeLabs Contract Services Requisition Grifols Confirmatory Testing Form

- This form will be accepted at any LifeLabs or CML Healthcare Lab
- A sample of the patients' blood will be sent to the Genetics lab at Credit Valley Hospital (CVH)
- A genetic analysis will be sent to the physician requesting the testing

Questions related to genetic testing can be forwarded to the Genetics Laboratory at CVH: (905) 813-1100 x6288

AlphaID™

- The Grifols AlphaID kit is a free and fast saliva collection kit
- Kits are sent to the BioCerna LLC Lab
- An analysis of common genetic variants and associated alleles will be performed
- A report will be sent to the physician requesting the testing

To order additional AlphaID kits, please call 1-877-3ALPHA1 (1-877-325-7421) or contact your GRIFOLS Canada representative

*A level below 20 µM (1.13 g/L) will detect PiMZ, PiSZ, PIMS, and PISS with 92% sensitivity and 90% specificity.[4]

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