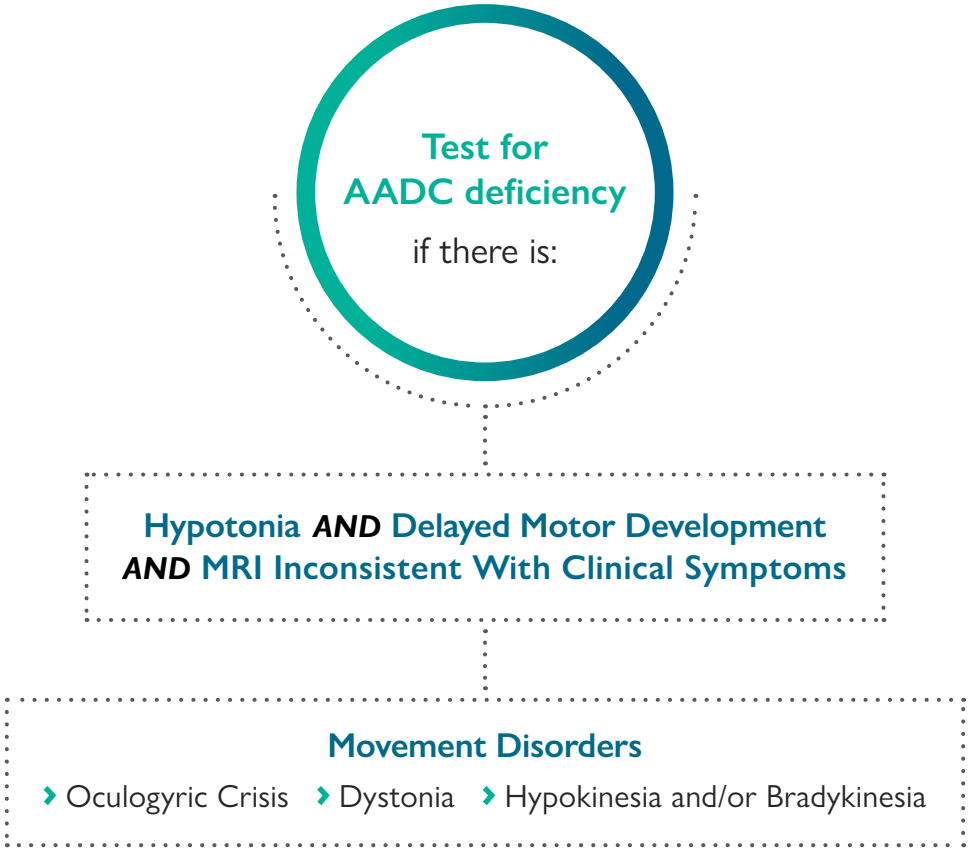
# Earlier identification can help improve the care and management of patients with AADC deficiency[1-3]

## Aromatic L-amino Acid Decarboxylase (AADC) Deficiency

is a genetic disease associated with defects in neurotransmitter synthesis, resulting in life-limiting motor and autonomic dysfunction, developmental delay, and premature death.[1-3]

### The diagnostic pathway for suspected AADC deficiency[2,4]




Autonomic symptoms are often present

- Ptosis
- Temperature Instability
- Nasal Congestion

*Many of the most common symptoms of AADC deficiency can also be attributed to a number of other conditions such as cerebral palsy and epilepsy, resulting in potential misdiagnosis.*[2,3,5-7]

# Diagnostic tests that identify AADC deficiency[2]

## Following this diagnostic process can help diagnose AADC deficiency[2]

### 1 Perform[2]

**a)** Genetic Testing

**b)** Plasma enzyme activity assay

***AND/OR***

**c)** CSF neurotransmitter metabolite panel

### 2 Interpret[2]

| 1. Genetic testing (Mutation(s) in the DDC gene) | | |
|---|---|---|
| **2. Plasma** | | **3. CSF** |
| **Decreased AADC enzyme activity** | ***AND/OR*** | ***HIGH LEVELS OF*** 3-OMD, L-dopa, 5-HTP<br>***LOW LEVELS OF*** 5-HIAA, HVA, MHPG<br>Normal pterins |

### 3 Other diagnostic tests that may be helpful[2]

- Blood level measurement of 3-OMD
- Urinary organic acid analysis

***Consensus guidelines recommend confirming an AADC deficiency diagnosis with a genetic test. If genetic diagnosis is performed as the first step, functional confirmation should be completed by measuring AADC enzyme activity in plasma and/or neurotransmitter metabolites in CSF.[2]***

3-OMD=3-O-methyldopa; 5-HIAA=5-hydroxyindoleacetic acid; 5-HTP=5-hydroxytryptophan; CSF=cerebrospinal fluid; DDC=dopa decarboxylase; HVA=homovanillic acid; L-dopa=L-3,4-dihydroxyphenylalanine; MHPG=3-methoxy-4-hydroxyphenylglycol; VLA=vanillactic acid.

**References: 1.** Manegold C, Hoffmann GF, Degen I, et al. Aromatic L-amino acid decarboxylase deficiency: clinical features, drug therapy and follow-up. *J Inherit Metab Dis.* 2009;32(3):371-380. **2.** Wassenberg T, Molero-Luis M, Jeltsch K, et al. Consensus guideline for the diagnosis and treatment of aromatic l-amino acid decarboxylase (AADC) deficiency. *Orphanet J Rare Dis.* 2017;12(1):12. doi: 10.1186/s13023-016-0522-z. **3.** Brun L, Ngu LH, Keng WT, et al. Clinical and biochemical features of aromatic L-amino acid decarboxylase deficiency. Neurology. 2010;75(1):64-71. **4.** Garcia-Cazorla A, Duarte S, Serrano M, et al. Mitochondrial diseases mimicking neurotransmitter defects. *Mitochondrion.* 2008;8(3):273-278. **5.** Krigger KW. Cerebral palsy: an overview. *Am Fam Physician.* 2006;73(1):91-100. **6.** Ng J, Papandreou A, Heales SJ, et al. Monoamine neurotransmitter disorders—clinical advances and future perspectives. *Nat Rev Neurol.* 2015;11(10):567-584. **7.** Kurian MA, Dale RC. Movement disorders presenting in childhood. *Continuum (Minneap Minn).* 2016;22(4 Movement Disorders):1159-1185.



PTC THERAPEUTICS