A Guide for Individuals <u>and</u> Families

# Genetic Testing Options for Pompe Disease

#### Pompe disease is a rare, inherited glycogen storage disease

that affects the muscles, particularly the heart and skeletal muscles. Pompe is also called acid maltase deficiency or glycogen storage disorder type II.

It is caused by variants (or mutations) in the GAA gene. This gene carries instructions to make the enzyme acid alpha-glucosidase (GAA), also called acid maltase, which plays a role in the body's ability to process and break down complex sugars (glycogen). In an individual with Pompe, each copy of the GAA gene has a variant that impacts its ability to make GAA. Without enough GAA in the body, glycogen builds up in and damages muscle cells.

Pompe is a progressive condition, meaning the symptoms worsen over time, though there are treatment options available to help slow the progression.

# **Types of Pompe disease**

There are two classifications: infantile onset and late onset.

Symptoms of infantile-onset Pompe disease (IOPD) usually are apparent within the first couple months of life. Features commonly associated with IOPD include low muscle tone (hypotonia), heart issues such as hypertrophic cardiomyopathy, feeding difficulties and poor weight gain, respiratory insufficiency, hearing loss, and high levels of creatine kinase (CK) in the blood, which indicates muscle damage.

Symptoms of late-onset Pompe disease (LOPD) may start any time after age 1 and sometimes do not become apparent until adulthood. The most common features of LOPD include weakness in muscles close to the core of the body (proximal muscles), making activities like standing from a chair or raising one's arms difficult; a change in how one walks (gait); exercise intolerance; respiratory insufficiency; sleep apnea; and chewing and swallowing difficulties. The heart is not as frequently involved as in IOPD, but people with LOPD may experience cardiac conduction abnormalities and an enlarged aorta.



### Receiving a Pompe diagnosis

A doctor might suspect Pompe based on signs and symptoms of the disease, but many conditions have similar features. To make a diagnosis of Pompe, your provider might do a GAA enzyme analysis. This test involves looking

at GAA enzyme levels in a blood sample or from a skin or muscle biopsy. However, genetic testing is considered the gold standard for a definitive diagnosis. Genetic testing can be done with a blood sample, cheek swab, or saliva sample.

It is important to confirm your diagnosis because Pompe is a progressive condition, and there are treatment options available. An early diagnosis is essential to starting treatment and slowing the progression.

Once you have a confirmed diagnosis of Pompe, you can discuss treatment options and medical management recommendations with your care team. A multidisciplinary approach to medical care is important because of the numerous body systems that can be involved in Pompe.

have LOPD.

# Benefits of genetic testing

Genetic testing not only confirms a diagnosis of Pompe, but it can provide additional information that may be beneficial to you and your family.

Genetic testing may provide information on your type of Pompe. The disease type affects the progression and severity of the disease.

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Genetic testing in an affected individual allows for testing of other family members to determine whether they also have Pompe, or

if they are a carrier and might have children with Pompe. Another benefit of genetic testing

is the option to participate in clinical trials for Pompe. Most clinical trials require a genetic diagnosis of the disease.

If you are interested in genetic testing for Pompe, speak with your healthcare provider. Usually, genetic testing is coordinated by a geneticist or genetic counselor who has specialized training in interpreting genetic test results. Genetic test results can be complicated, so having a genetics specialist involved is important. You can find a local genetic counselor at findageneticcounselor.nsgc.org.

#### **NEWBORN SCREENING**

Newborn screening is a nationwide public health program that identifies newborns with certain serious and life-threatening genetic diseases that can be treated, and for which early treatment may contribute to better outcomes. MDA advocates for the inclusion of neuromuscular diseases on the Recommended Uniform Screening Panel (RUSP), which is the national guideline for newborn screening programs. As a result, Pompe is included.

Learn more about newborn screening at mda.org/newbornscreening.

### SPONSORED GENETIC TESTING PROGRAMS

These genetic testing programs are free of charge to the individual getting the test. The type of genetic test depends on the sponsor. Visit the websites below to learn about eligibility requirements.

#### Invitae Detect Lysosomal Storage Diseases (LSDs) invitae.com/en/detectLSDs

Invitae Detect Muscular Dystrophy invitae.com/en/detect-musculardystrophy

#### **Lantern Project**

perkinelmergenomics.com/ testing-services/sponsored-testingprograms/the-lantern-project

## **Cost of genetic testing**

Usually, genetic testing for Pompe is performed for a fee, and the exact cost varies based on the specific test, laboratory, and insurance coverage.

There are some sponsored programs for genetic testing for Pompe, meaning a company sponsors the test so it is free of charge to the individual getting the test. There may be eligibility requirements for sponsored testing. You can work with your healthcare provider and your insurance company to determine potential costs and/or eligibility for sponsored genetic testing, including what information is shared with the sponsor.

MDA also can provide more information on no-cost or low-cost genetic testing options. Contact the MDA Resource Center at 833-ASK-MDA1 or email resourcecenter@ mdausa.org. mages: iStock.com/fizkes; Anastasiia Okhrimenko; Jennifer Borton; DrAfter123; Leontura

To learn more about Pompe disease, visit mda.org/disease/metabolic-myopathies/types/ acid-maltase-deficiency-pompe-disease or download our Pompe Disease Fact Sheet.

This resource was developed with the expertise of Krista Schatz, Certified Genetic Counselor at John Hopkins University, Department of Genetic Medicine.



Muscular Dystrophy Association

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