## What is the treatment for Pompe disease?

Individuals with Pompe disease are treated with enzyme replacement therapy (ERT). This entails replacing the non-working GAA enzyme with a man-made form of it called alglucosidase alfa. This is done by giving the individual IV infusions of the enzyme twice a month. Once a baby or child with Pompe disease has symptoms, it is important to start ERT as soon as possible. ERT has been successful in slowing progression of the disease, and in many cases it has caused symptoms to improve or disappear entirely. Babies who are identified as having Pompe disease but do not have symptoms yet do not need to start treatment right away. The metabolic geneticists will speak with you to determine when the time is right to start ERT.

## No one else in my family has Pompe disease. Is it still possible for my baby to have the condition?

Yes. Pompe disease is a recessive genetic condition, and therefore there is not usually a family history of it.

## My baby was found to have a pseudodeficiency allele. What does that mean?

A pseudodeficiency allele is a change in the GAA gene sequence which results in lower GAA enzyme activity, but not low enough to cause Pompe disease. Babies with only a pseudodeficiency allele do not have Pompe disease. Babies with a pseudodeficiency allele and a GAA gene mutation most likely do not have Pompe disease either, but still need to undergo further evaluation with a Metabolic Geneticist to be certain.

## Who can I call if I have additional questions about newborn screening for Pompe disease?

Your baby's doctor or the NYS Newborn Screening Program are resources for additional information about newborn screening for Pompe disease. Newborn Screening Program staff can be contacted at 518-473-7552, Monday through Friday, 8:00 am until 4:45 pm or at **nbsinfo@health.ny.gov**.

NEW YORK STATE | Department of Health

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# Newborn Screening For Your Baby's Health

Information for Parents on
**Pompe Disease**

NEW YORK STATE | Department of Health | Wadsworth Center

## What is newborn screening?

Every state has a newborn screening program to identify infants with rare disorders, which would not usually be detected at birth. Early diagnosis and treatment of these disorders often prevents serious health problems.

## What is Pompe disease?

Pompe disease is one of more than 40 different disorders which are included in newborn screening in New York State. It is a rare inherited condition caused by the buildup of a complex sugar called glycogen in the body's cells. Glycogen is usually broken down by an enzyme called alphaglucosidase (GAA); when GAA is working it helps prevent the buildup of glycogen. In individuals with Pompe disease, this GAA enzyme is missing entirely or working poorly. This results in the buildup of glycogen, and this extra glycogen causes certain organs and tissues, such as muscle, to function abnormally.

## What are the symptoms of Pompe disease?

The symptoms of Pompe disease differ from individual to individual, partly based on the age of the person at which his or her symptoms first appear. The age of onset of symptoms is usually closely related to how much functioning GAA enzyme is present (ie. the less active the enzyme is, the earlier symptoms appear and the more severe they are). As a result, there are two main forms of Pompe disease:

- Early-onset: The GAA enzyme is completely or very nearly missing. In these babies, symptoms appear soon after birth and include poor muscle tone, an enlarged and weakened heart, poor feeding and growth, and difficulty breathing.
- Late-onset: The GAA enzyme is only partially missing. In these individuals, the age of onset of symptoms is variable; symptoms may appear as early as the first few months of life, or as late as late adulthood. The primary symptom is muscle weakness that gets worse over time, and young children and babies may experience delayed developmental milestones. The heart is less likely to be involved in this form of Pompe disease.

## How does New York State screen for Pompe disease?

NYS screens for Pompe disease by measuring the amount of GAA enzyme activity in a sample of the baby's blood. If there is a low amount of enzyme activity, then genetic testing is done to look for mutations in the GAA gene. Mutations in this gene result in lower GAA enzyme activity. Every person has two copies of this gene. Pompe disease is an autosomal recessive genetic condition, meaning that individuals who have the condition have a gene mutation in both copies of their GAA gene.

## What does it mean to be a carrier of Pompe disease?

Carriers of Pompe disease are individuals who have one mutation in one out of their two GAA genes. These individuals still have one GAA gene without a mutation in it. Carriers of Pompe disease do not have any signs or symptoms of the condition, but have a 1 in 4 (25%) chance to have a child with Pompe disease if their partner is also a carrier. Both parents of a child with Pompe disease are nearly always carriers of the condition.

## My baby had a positive newborn screen for Pompe disease. Does my baby definitely have the condition?

If your baby was found to have two mutations in the GAA gene, then it is very likely that he or she has Pompe disease. Your baby will undergo a complete medical examination with a genetics specialist, as well as additional testing to determine how much GAA enzyme activity is present and if there are any symptoms of the disease.

If your baby was found to have one mutation in the GAA gene, then it is possible that he or she has Pompe disease, or that he or she may be a carrier of it.

Your baby will undergo further evaluation and testing with a specialist to determine if he or she has Pompe disease.

Within the GAA gene, we know of at least one change in the gene sequence which results in lower GAA enzyme activity, but not low enough to cause any symptoms of Pompe disease. This gene change is called a "pseudodeficiency allele," and it will be detected during the NYS newborn screening process.

## How do I find out if my baby has Pompe disease?

Your baby's doctor will ask you to take your child to a special doctor, called a Metabolic Geneticist because they are experts at diagnosing and treating Pompe disease. Additional blood tests will be ordered by the geneticist to find out if your baby has Pompe disease. Your baby may also need special evaluations of his or her heart, and so may be referred to a Pediatric Cardiologist as well. These tests and evaluations are very important. If diagnosis and treatment of Pompe disease are delayed, it can lead to serious health complications for your child. In some cases, these complications are life threatening.