

Progress Continues in Pompe Disease Treatment

Barbara K. Burton, MD, Attending Physician in Genetics, Genomics, and Metabolism and Professor of Pediatrics at the Feinberg School of Medicine at Northwestern University, remembers that earlier in her career, kids with the infantile form of Pompe disease often barely reached their first birthdays. Now, she often hears about them running, jumping, and playing on their 10th birthdays.

Treatment for infantile and late-onset Pompe disease has improved over the course of her career, and, according to Dr. Burton, this trend will continue.

“There are a number of newly approved drugs for Pompe disease focusing on enzyme replacement therapy [ERT], and one recently approved is a combination of enzyme replacement therapy and chaperone,” Dr. Burton says, referring to the September 2023 [approval](#) of Pombiliti™ (cipaglucosidase alfa-atga) + Opfolda™ (miglustat) for adults living with late-onset Pompe disease. This two-component therapy consists of cipaglucosidase alfa-atga, a long-term ERT, and miglustat, an oral enzyme stabilizer.

Another type of therapy being explored in clinical trials is a small molecule approach to reducing glycogen synthesis in the muscles.

“ERT kind of tackles the disorder on the back end with the breakdown of glycogen, which is important in Pompe disease because of enzyme deficiency.” The idea behind currently approved ERTs is to replace the enzyme and allow that breakdown. However, new therapies being investigated would reduce the input, attacking from the front end to reduce glycogen synthesis. Two companies currently developing products with this “front-end approach” are [Maze Therapeutics](#) and [Aro Biotherapeutics](#).

Some companies are looking at different approaches, including muscle-directed gene therapy that would put functional genes for the acid maltase enzyme into the muscles to impact the disease directly. [Astellas Gene Therapies](#) is an example of a company making strides with muscle-directed gene therapy in infantile Pompe disease.

Dr. Burton says another approach is liver-directed gene therapy, which would “make the liver into a factory for the enzyme” and provide a continuous source in the plasma for uptake into the skeletal muscle. This would eliminate the need for administering ERT weekly or every other week. An ongoing [clinical trial sponsored by Spark Therapeutics](#) is exploring this option in late-onset Pompe disease.

While Dr. Burton is optimistic about possible treatments, she counsels that patience is also required.

“None of the potential new treatments have reached the phase 3 clinical trial level,” she says. “All are in the preclinical stage or phase 1 or 2, so don’t expect to see them sooner than five years. But there should be optimism for a disease where we’ve already made important progress.”

Resource for Providers

MDA will host a webinar on Pompe disease in 2024 as part of our “What’s New in Neuromuscular Disease” medical education series. Find this and previous webinars [here](#).