Qualitative Interviews to Characterize Disease and Treatment Burden at Baseline in Adult and Pediatric Patients Participating in a Pivotal Phase 3 Trial of DTX401 for the Treatment of Glycogen Storage Disease Type Ia

Diane M. Turner-Bowker,[1] Shayna Egan,[1] Jessica Butler,[1] Richard Collis,[1] John J. Mitchell[2]

[1]Ultragenyx Pharmaceutical Inc., Novato, CA, USA; [2] Montreal Children's Hospital, Montreal, Quebec, Canada

BACKGROUND & OBJECTIVE

Glycogen Storage Disease Type Ia (GSDIa) is a rare, inherited, autosomal recessive disease with deficiency of glucose-6-phosphatase-α (G6PC) which results in impaired glycogenesis and gluconeogenesis[1,2] and is associated with substantial humanistic burden, requiring the frequent consumption of exogenous glucose (e.g., uncooked cornstarch) for patient survival.[3,4]

DTX401 (pariglasgene brecaparvovec) is an investigational adeno-associated virus serotype 8 vector (AAV8)–based gene therapy, designed to deliver the human wild-type G6PC1 transgene to hepatocytes and restore endogenous glucose production. DTX401 is being tested in the ongoing, Phase 3, double-blind, randomized, placebo-controlled study for the treatment of GSDIa in patients 8 years of age and older (NCT05139316).

Qualitative interviews were conducted at Baseline prior to treatment as part of the Phase 3 trial to explore the patient experience of GSDIa and expectations for treatment.

METHODS

Trial participants were asked to complete a 30-minute telephone interview at Baseline between randomization and dosing. Following ethics approval, interviews were conducted using a semi-structured interview guide and audio-recorded with participant permission. Data were transcribed, coded using Atlas.ti (version 8.0 or higher), and content analyzed.

RESULTS

Participants

- Most (94%, n=43/46) of the total trial sample dosed at Baseline completed interviews. Of those interviewed, 60% (n=26/43) were adults ≥18 years and 40% (n=17/43) were pediatric patients ages 8 to <18 years

Symptoms

- Most participants (95%, n=41/43) reported low blood sugar (i.e., hypoglycemia) despite best efforts for condition management (**Figure 1**)
- Other frequently mentioned symptoms of hypoglycemia included tiredness, feeling hungrier than usual, irritability, shakiness, and difficulty concentrating
- Low blood sugar and tiredness were identified as the most bothersome symptoms and the most important symptoms to treat

Impacts

- The most commonly mentioned impacts on daily life included emotional (e.g., worry about missing a dose, feeling left out, feeling frustrated), diet/treatment regimen (e.g., having to plan ahead, inconvenience of following the diet), physical appearance, social, physical activity/exercise, school/work performance, and sleep (**Figure 2**)
- Diet/treatment regimen, appearance, and social impacts were identified as most bothersome impacts
- Diet/treatment regimen, social, and physical impacts were identified as most important to treat

Patient Perspectives on Cornstarch Use

- Participants most commonly reported that there were no positive aspects to taking cornstarch (36%, n=14/39)
- Some participants described positive aspects about cornstarch effectiveness (26%, n=10/39; e.g., ability to maintain blood sugar levels); that it reduces how frequently they need to eat (8%, n=3/39); that it is reliable (5%, n=2/39); tastes acceptable (5%, n=2/39); is easy to administer (3%, n=1/39); and/or can boost energy (3%, n=1/39)
- Participants reported several negative aspects of cornstarch use (**Figure 3**)

Overall Expectations for Treatment

- The most commonly reported overall expectation for gene therapy, for both adults and pediatric patients, was reduction or elimination of cornstarch/Glycosade® use

CONCLUSION

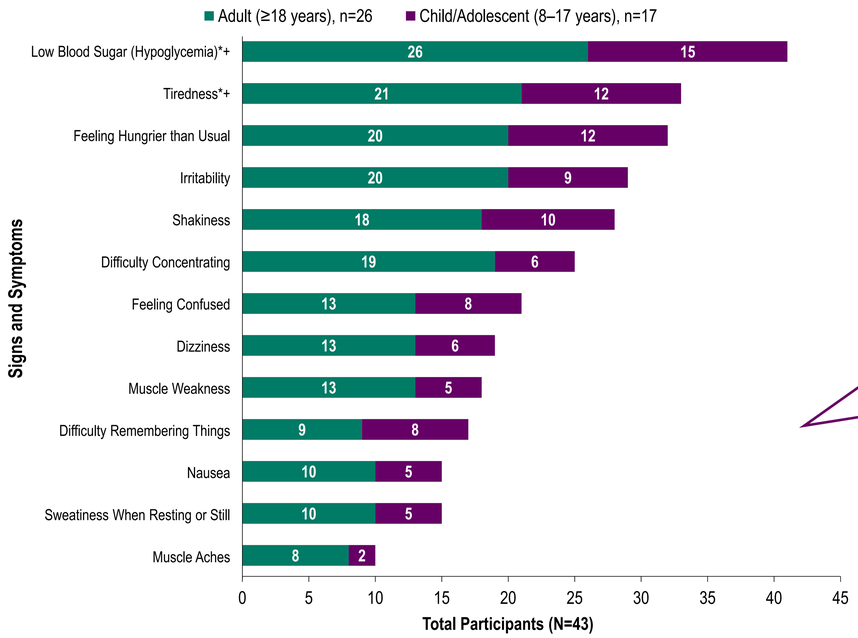
Qualitative in-trial interviews helped to demonstrate the substantial burden faced by patients with GSDIa. Results inform patient expectations for treatment and clinically meaningful outcomes.

REFERENCES & DISCLOSURES

1. Lei KJ, Shelly LL, Lin B, et al. (1995) Mutations in the glucose-6-phosphatase gene are associated with glycogen storage disease types 1a and 1aSP but not 1b and 1c. *J Clin Invest.* 95(1): 234-240. **2.** Lei KJ, Shelly LL, Pan CJ, et al. (1993) Mutations in the glucose-6-phosphatase gene that cause glycogen storage disease type 1a. *Science.* 262(5133): 580-583. **3.** Bali DS, El-Gharbawy A, Austin S, et al. (1993) Glycogen Storage Disease Type I. In: Adam MP, Ardinger HH, Pagon RA, et al. (eds) GeneReviews®. Seattle (WA). **4.** Derks TGJ, Rodriguez-Buritica DF, Ahmad A, et al. (2021) Glycogen Storage Disease Type Ia: Current Management Options, Burden and Unmet Needs. Nutrients 13(11).

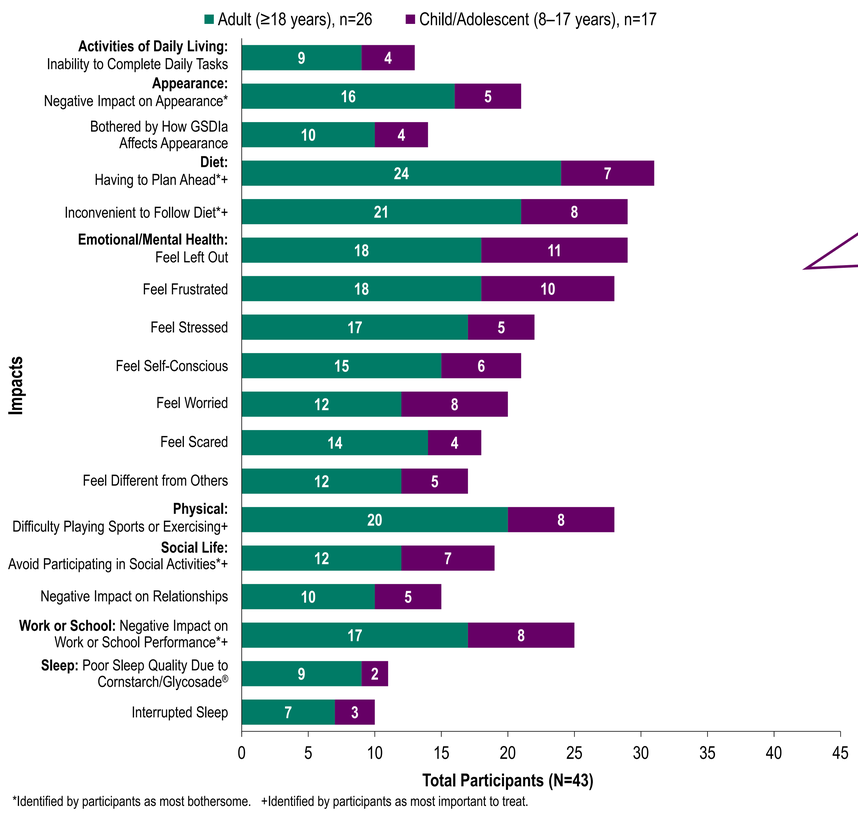
DTB, SE, JB, and **RC** are employees and stockholders of Ultragenyx Pharmaceuticals Inc. **JJM** serves as a consultant for Moderna, RegenxBio, Denali, Takeda, Biomarin, and Ultragenyx.
We would like to acknowledge Maia Bowker for providing medical writing support funded by Ultragenyx. This study was funded by Ultragenyx.

Figure 1. Signs/Symptoms Reported at Baseline



*Identified by participants as most bothersome. +Identified by participants as most important to treat.

Figure 2. Impacts Reported at Baseline



*Identified by participants as most bothersome. +Identified by participants as most important to treat.

Figure 1B. Illustrative Quotes for Signs/Symptoms

- *"Your blood sugar could get dangerously low, especially if you don't feel it, and then you go into like a seizure or something before you know it, and then you could die."*
- *"When I have low blood sugar, I get hypoglycemic. Usually, tired and lethargic come with it, a little bit of anxiety sometimes, the way low blood sugar works, a little shaky, sometimes a little dizzy, sometimes a little blurred vision. Sometimes a little bit of sweaty. I think those are the big ones for me."*
- *"With GSDIa, I experience a lot of fatigue, memory loss issues with that. I experience a lot of just overall – like feeling really low energy and super-lethargic sometimes. And like random points in the day where I just feel like you get just swept down by random blood sugar drops and all that."*
- *"I'd say the tiredness [is my most bothersome symptom]... Because it happens often, and it prevents me from functioning normally. It really is a handicap."*

Figure 2B. Illustrative Quotes for Impacts

- *"I'm always living by the clock, so like if we go on a trip, we got to get prepared. Like even just going on a walk outside my house, I have to get a big bag and test before I go and do a bunch of preparations just to make sure I don't die halfway through."*
- *"There is times I do feel self-conscious, particularly when I'm out in public and I have to drink cornstarch. I remember in high school, for example, I would hide my cornstarch. When I was drinking it, I would hide in my locker so people wouldn't see."*
- *"It's difficult for me to schedule to, like, a workout. Or – I mean, I like to do things outside, like hiking, physical activity, which sometimes it restricts me or hinders me from doing because I have to schedule around and make sure I have cornstarch with me, snacks with me at all times."*
- *"I'm stressed on a daily basis about it. Probably the lows, just worried about getting low and what activity am I going to have that day and am I going to have enough food packed and will I be able to get my blood sugar up quickly if it drops? Just all those stressors and worries."*

Figure 3. Reported Negative Aspects of Cornstarch*

*Larger words represent concepts mentioned more frequently by participants during interviews.

Presented at *The Professional Society for Health Economics and Outcomes Research (ISPOR);* May 13–16, 2025; Montreal, QC, Canada