

# Small, But Mighty: How a Rare Disease Foundation Built Natural History Data to Accelerate New Therapies

## Foundation for Prader-Willi Research Applies CTTI's Digital Health Trials Recommendations

### SUMMARY

The Foundation for Prader-Willi Research was established with one aim in mind: to eliminate the challenges of Prader-Willi syndrome, or PWS, through the advancement of research and therapeutic development. But it's not always easy given the lack of natural history data on the condition, which only affects one in every 15,000 people. Here is how the Foundation used CTTI's Digital Health Trials recommendations to successfully establish baseline data for weight changes in PWS patients to support sponsors of PWS research in designing more impactful trials.

### GOAL(S)

PWS is a rare genetic disorder that occurs spontaneously due to a loss of a region of chromosome 15. Ultimately, PWS results in cognitive issues and impaired regulation of body processes, including a constant sense of insatiable hunger (a condition known as hyperphagia) in older children and adults. As a result, individuals with PWS usually have trouble controlling their weight and often experience complications of obesity. There is currently no cure, but the Foundation for Prader-Willi Research is trying to change that. Established in 2003 by a small group of parents who saw the need to foster research that would help their children with PWS lead healthier and more fulfilling lives, the Foundation today serves as an advocate for hundreds of families committed to PWS research.

### CHALLENGES

To date, no Food and Drug Administration (FDA)-approved drugs have proven effective in controlling appetite and food-related behavior in PWS. However, several medications are currently undergoing evaluation in clinical trials to assess their impact on hyperphagia in PWS. Sponsors of these trials have reached out to the Foundation for Prader-Willi Research to better understand the demographics of PWS patients—specifically, they needed to know baseline weight changes over time to develop a clinical trial protocol that accurately assesses the effect of the new treatment being studied. Existing data in centers of excellence (groups of subject matter experts with a shared focus) only include people with the means to travel to the centers, so they are not representative of the real world. But it would likely take multiple years for a research sponsor to establish representative baseline information, which was time the Foundation couldn't afford to lose. It needed a way to quickly and economically capture baseline data across diverse patients to support ongoing and future PWS trials.

### SOLUTION(S)

CTTI's [Digital Health Technologies Recommendations](#) were of interest to the Foundation because of their guidance on how to best use digital health technology, like mobile phones, to rapidly gather data that are useful to sponsors and accepted by regulators. The Foundation for Prader-Willi Research's co-founder also sat on CTTI's [Novel Endpoints](#) project team at the time, and the recommendations CTTI was developing for that project tied nicely to the Foundation's goal. CTTI's many recommendations, now found in the [Digital Health Trials Hub](#), offered a full suite of tools and guidance to help the Foundation for Prader-Willi Research navigate the myriad of scientific and technological considerations that accompany the decision to use a digital technology for data capture, including technology selection; data collection, management, analysis, and interpretation; and protocol design and execution. These resources served as blueprints for the Foundation's effort to establish natural history data on weight fluctuations in people with PWS.

### TAKING ACTION

The Foundation for Prader-Willi Research had never conducted a mobile study, so the process included a bit of a learning curve. CTTI's recommendations supported the Foundation through the complicated process of technology selection and data management. Per CTTI's guidance in [Considerations for Advancing the Use of Digital Technologies for Data Capture & Improved Clinical Trials](#), the selection process must reflect a balancing act of considerations. For example, data accessibility for the right stakeholders (like investigators, sponsors and regulators) must be prioritized, while also preventing unauthorized user access; data quality must be optimized, but participant privacy cannot be sacrificed in the process. The recommendations ultimately guided the Foundation to select [Mosio](#) as a HIPAA-compliant platform for text messaging weight updates and gathering data.

Once the technology vendor was selected, the Foundation established a six-month text-message-based prospective cohort study in PWS adolescents and adults aged 12 and older. The study recruited participants through the Foundation's established patient connections, as well as through other PWS advocacy groups and on social media. Participants were asked to fill out a baseline survey with demographic questions around their sex, age, and any exposure to growth hormone therapy, which has been shown to have positive effects on the growth and body composition of people with PWS. Then participants logged their weight weekly over six months via Mosio, with check-ins at three and six months to log any major changes in things like food access or medication use. At the end of the six months, the team would have valuable information on participants' weight, BMI, and percent change of both over time.

In alignment with CTTI's recommendations, the Foundation also committed to sharing back the research results with the community of participants. Dissemination of findings in plain language to participants is a critical part of patient engagement that ensures research participation is a two-way, collaborative process where research teams and patients both benefit.

"We were initially worried about compliance given the need for weekly updates in a fully mobile setting," said the Foundation for Prader-Willi Research's co-founder, who has a son with PWS. "However, the existing trust we had built with our patient community helped us convey the importance of this data to the future of PWS treatments, so our participants were highly motivated. Recruitment was swift, and compliance was fantastic throughout the six-month process, with over 95% of possible data points collected."

### IMPACT

The Foundation's [study results](#) were published in the *Orphanet Journal of Rare Diseases* in September 2020. It remains the first and only investigation of real-world weight variability at baseline and change over six months in a large group of PWS adolescents. The study recruited 165 patients in a mere six weeks, which reflects a higher rate of participation than most traditional studies of PWS achieve and at a much faster speed. It also cost only \$25,000, a fraction of what a sponsor's cost would be, and reinforced growth hormone therapy's positive impact on weight control in PWS. However, the true value of the study is in impacts that have yet to be realized.

"This study was about not waiting for things to come to us, but rather being proactive as a patient community so we are more research-ready to support PWS trials," said the Foundation's co-founder. "It was a fast, low-burden way to meaningfully improve the baseline knowledge around weight in PWS patients, which is often a key criterion for PWS trials. Because of this research, future PWS studies will be based in knowledge rather than guesswork."

#### **ADVICE**

Simple efforts can often have big outcomes. The lack of natural history data on weight in PWS patients wasn't halting research efforts, but it was making them less precise (and consequently less meaningful to patients). Particularly now, as digital health technology is increasingly embraced by sponsors and regulators, advocacy groups are in a special position to make an impact. If there is a concept of interest that isn't being addressed elsewhere, advocates can use the same approach the Foundation for Prader-Willi Research used to nudge the field in a more meaningful direction.

"CTTI's recommendations are a great guide to give you a jumping off point for opening new directions that can support research in your area of interest," said the Foundation's co-founder. "Take advantage of them as tools to channel your power and lay the path to meaningful outcomes."

#### **ORGANIZATION**

Foundation for Prader-Willi Research

#### **CONTACT**

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#### **ORGANIZATION TYPE**

Patient

#### **IMPLEMENTATION DATE**

2018

#### **TOPIC**

Digital Health Technologies

#### **RELATED CTTI PROJECT**

[Digital Health Technologies](#)

#### **CTTI RESOURCES**

[CTTI Recommendations: Advancing the Use of Mobile Technologies for Data Capture & Improved Clinical Trials](#)

#### **NON-CTTI RESOURCES**

[Variability and change over time of weight and BMI among adolescents and adults with Prader-Willi syndrome: a 6-month text-based observational study](#)