Leigh Syndrome Global Patient Registry

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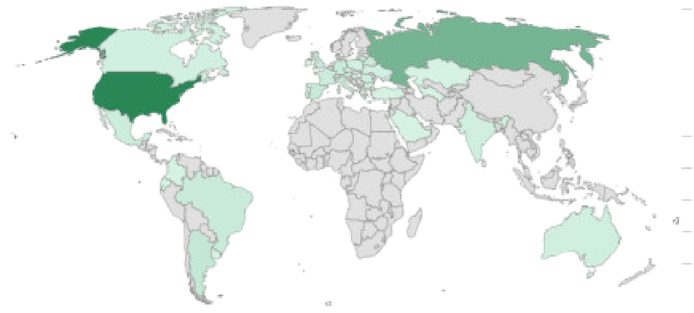
250+ participants enrolled
35+ countries represented



1 Introduction

Leigh syndrome (LS) is a rare genetic neurometabolic disorder, that leads to the degeneration of the central nervous system and shortened lifespan. The onset of symptoms usually occurs between the ages of three months and two years, but some patients have a later onset of symptoms. LS can be caused by over 110 mutations in nuclear or mitochondrial DNA and affects 1 in 40,000 individuals.

Cure Mito Foundation is a parent-led and all-volunteer nonprofit organization. The mission of Cure Mito is to unite the global Leigh syndrome community to accelerate patient-centered research, treatments, and cures.

2 Objectives

Leigh syndrome global registry was started by Cure Mito Foundation in September 2021 to meet the following goals:

- Internationally available
- Identify and collect comprehensive information about the LS patients population
- Facilitate clinical trials recruitment
- Consistently share results
- Build stronger patients' and researchers' community

3 Methods

Leigh syndrome global registry was started in partnership with the Coordination of Rare Diseases at Sanford (CoRDS). CoRDS is a disease-agnostic platform with data for 1,901 rare diseases, 99 partner groups, 17,589 participants, 50 states, and 94 countries represented - as of May 2023.

Participants are asked to respond to 2 surveys: General survey - uses Common Data Elements (CDE) advised by NIH and Leigh syndrome specific survey

Data analysis was done in SAS 9.4. Current poster presents data collected between **September 23, 2022 - May 17, 2023**

This study is registered with ClinicalTrials.gov, Identifier NCT01793168

Information collected:

- Demographic
- Genetic mutation
- Time to diagnosis
- Specialists seen
- Symptoms
- Loss of milestones
- Disease management
- Healthcare utilization
- Infections
- Quality of life
- Caregiver burden

4 Collaborations

Leigh syndrome patient registry data is interoperable with CDISC standards, as a result of a collaboration with Sumptuous Data Sciences. CDISC is a regulatory standard required by the FDA and PMDA.

Leigh syndrome patient registry data is shared into the RDCA-DAP platform by Critical Path Institute.

Registry and its data have been utilized by researchers and industry partners on numerous occasions.

5 Results

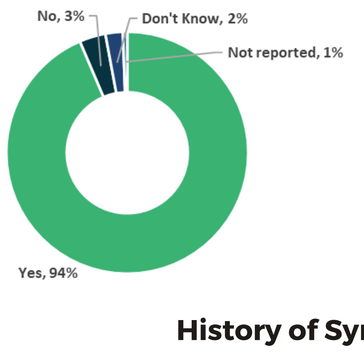
Participants Enrollment

Enrolled: 255; Excluded: 81 - did not complete one or both surveys, 2 - confirmed to be asymptomatic carriers of mutation; Included in analysis: 172

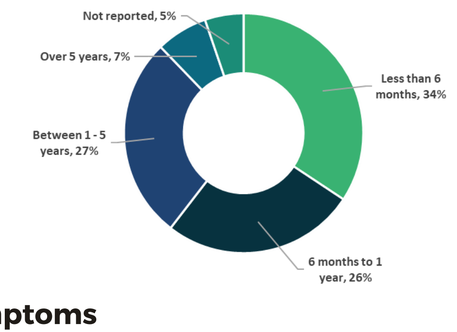
Participant is living, n (%)	158 (91.86)
Male, n (%)	81 (47.09)
White, n (%)	129 (75.00)
Age at survey submission[a] Mean (SD); Median (Q1, Q3); Min, Max	7.4 (9.0); 5.0 (3.0, 8.0); 0, 68
Age at death[b] Mean (SD); Median (Q1, Q3); Min, Max	3.0 (3.9); 1.5 (1.0, 3.0); 0, 14
Age at diagnosis[c] Mean (SD); Median (Q1, Q3); Min, Max	3.1 (4.6); 2.0 (1.1, 3.5); 0, 46

a. Calculated for living participants only (N=158)
b. Calculated for deceased participants only (N=14)
c. Calculated for participants with non-missing response (N=143)

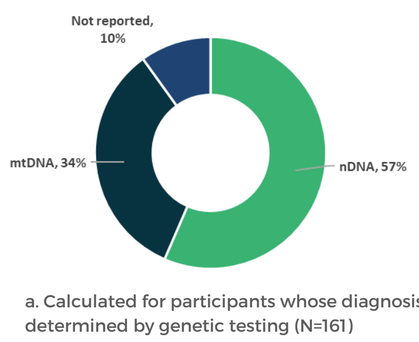
Diagnosis Determined by Genetic Testing (N=172)



Time to Diagnosis (N=172)

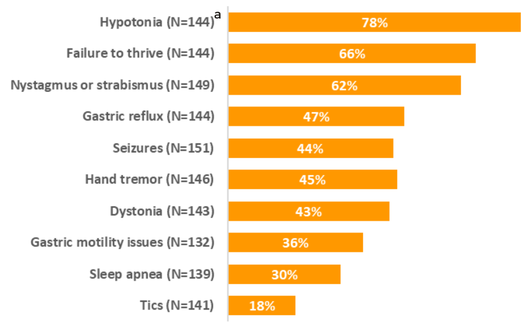


Mutation Type (N=161)[a]



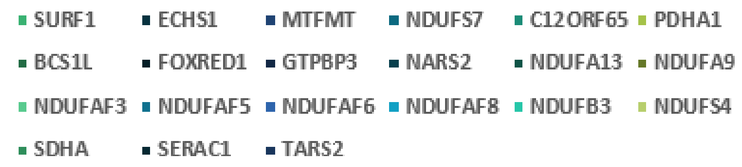
a. Calculated for participants whose diagnosis was determined by genetic testing (N=161)

History of Symptoms



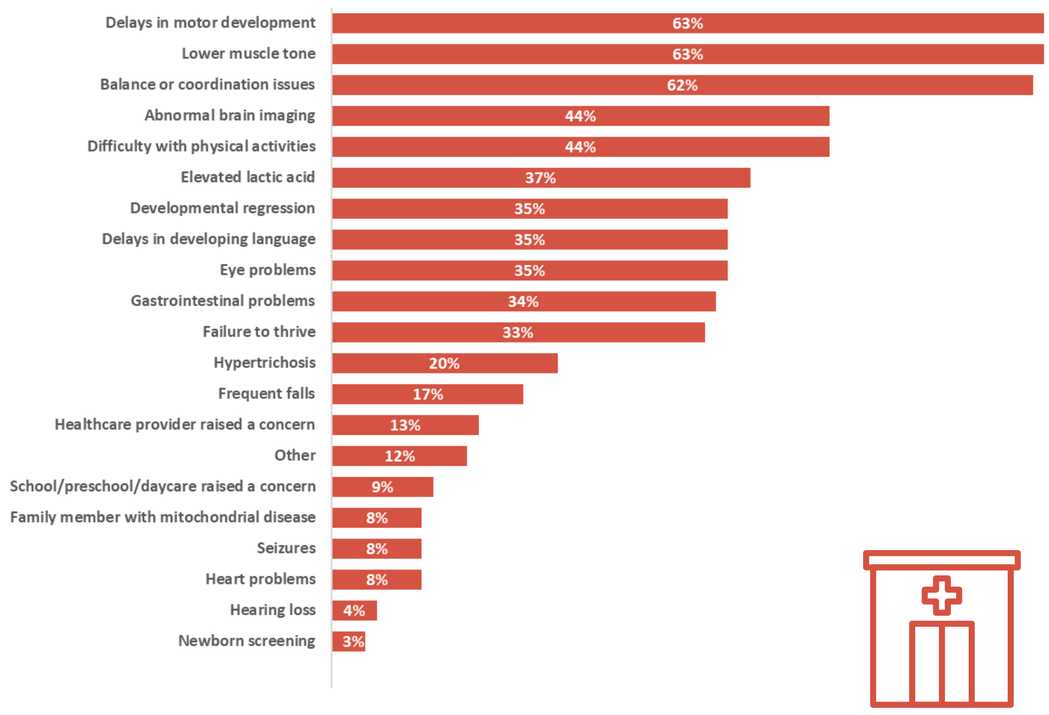
a. N=number of participants with a valid response (Yes, No) regarding a specific symptom.

Nuclear DNA Genes

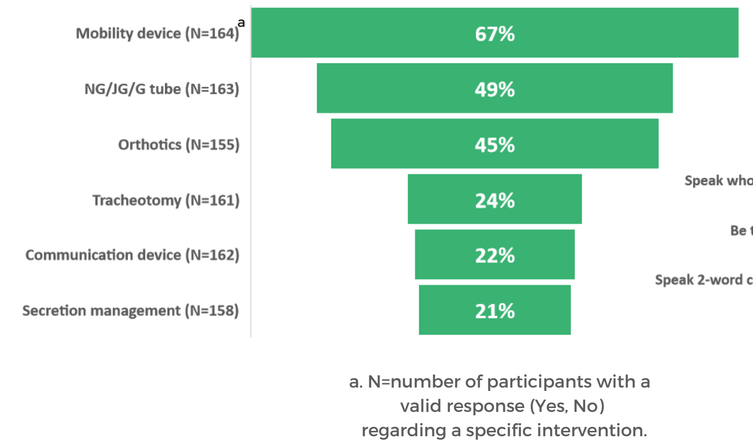


Mitochondrial DNA Genes

Symptoms and Concerns First Noticed (N=172)

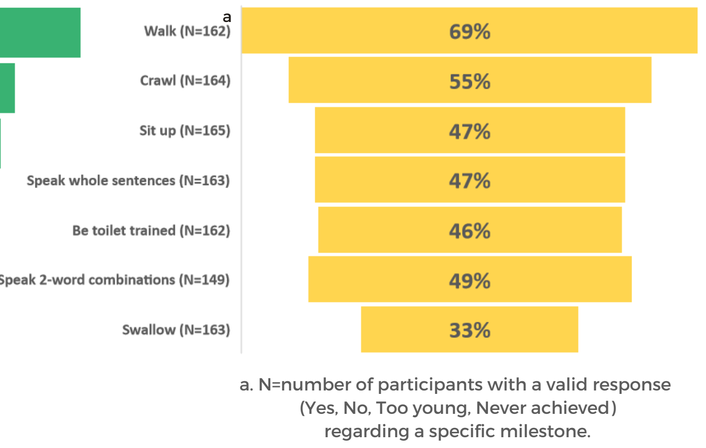


Disease Management



a. N=number of participants with a valid response (Yes, No) regarding a specific intervention.

Never achieved or lost milestone



a. N=number of participants with a valid response (Yes, No, Too young, Never achieved) regarding a specific milestone.

Emergency Room Visits in the 12 Months Prior to Survey Submission

Reported at least 1 ER visit - 58 participants
Median number of ER visits[a] - 2 visits
Maximum number of ER visits[a] - 45 visits

a. Calculated for those with at least one ER visit.

Nights in the Hospital in the 12 Months Prior to Survey Submission

Reported at least 1 night inpatient - 52 participants
Median number of nights[a] -3 nights
Maximum number of nights[a] - 150 nights

a. Calculated for those with at least one night in the hospital.

6 Conclusions

- Time to diagnosis is significantly shorter than previously reported for mitochondrial disease overall.
- The first concerns expressed by participants varied but were overwhelmingly connected to developmental delay or regression. Only for 13% of participants, first concerns were raised by a healthcare provider.
- Interventions such as mobility devices, feeding tubes, and others were ranked highly utilized by registry participants.
- Majority have lost or never achieved major milestones, for example, 69% lost or never gained ability to walk.
- Healthcare system utilization is significant but varies widely across the respondents.
- Approximately 30% of participants are from the US, which is unusual for a US-based registry, indicating it likely being the first truly international registry.

References

Rahman, S. (2023). Leigh syndrome. Mitochondrial Diseases, 43–63. https://doi.org/10.1016/b978-0-12-821751-1.00015-4

Clinical Data Acquisition Standards Harmonization (CDASH), https://www.cdisc.org/standards/foundational/cdash

NIH Common Data Element repository, https://cde.nlm.nih.gov/home