

MONITORING YOUR HEALTH

A Guide for Patients with Fabry Disease



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Monitoring your health: For patients with Fabry Disease

Fabry disease is a condition that can affect the whole body. Below are some common tests to monitor your symptoms and your condition. You should consult with your healthcare provider regarding any specific questions you have about your medical care.

| | | |
|---|---------------------------------------|---|
|  | Laboratory Tests | <ul style="list-style-type: none"> • A Lipid Panel measures various levels of fats in the blood • Plasma Globotriaosylceramide (GL-3) measures the level of a particular type of fat in the blood that is of interest in Fabry disease |
|  | Kidney Function Tests | <p>Blood chemistry tests include:</p> <ul style="list-style-type: none"> • Serum Creatinine: a waste product that comes from normal wear and tear on your muscles • Blood Urea Nitrogen (BUN): a waste product from the breakdown of protein in your food • Glomerular Filtration Rate (GFR) measures how well the kidneys remove waste and excess fluid from your blood <p>Urine Protein Tests compare the presence of specific proteins using ratios</p> |
|  | Ophthalmology Evaluation | <p>A microscope with a bright light (slit lamp) is used to look at the front and inside of your eyes. This examination checks for:</p> <ul style="list-style-type: none"> • Corneal whorling • Changes in the arteries supplying blood to the eye • Cataracts, or clouding of the lens |
|  | Audiology Evaluation | <p>Audiology tests to examine hearing loss may include:</p> <ul style="list-style-type: none"> • Tympanometry: tests eardrum movement by recording changes in air pressure • Otoacoustic emissions: tests how well sounds are heard at different frequencies • Auditory evoked potentials: tests your brain's response to sound |
|  | Brain MRI | Creates detailed pictures of your brain to look for changes that may relate to a stroke |
|  | Cardiac Function Tests | <p>Routine assessments to evaluate cardiac function include:</p> <ul style="list-style-type: none"> • Echocardiogram (ECHO): an ultrasound of your heart that measure its size and how it pumps • Electrocardiogram (ECG): measures the electrical activity of your heart • Holter Monitor: a portable device that tracks your heart's activity over a period of time • Cardiac MRI: creates detailed pictures of your heart |
|  | Lung Function Test/ Spirometry | A lung function test measures how much and how forcefully you can blow out air from your lungs in one breath. To see how well your lungs are functioning, you will be asked to take in a big breath, and then blow as hard and long as you can into a machine called a spirometer. |
|  | Quality of Life | Surveys to assess quality of life may include the SF36® Health Survey, EuroQOL, or PedsQL® Measurement Model |
|  | Pain Evaluation | Measures the presence and severity of pain using the following scales: BPI, Fabry Specific Pain and QOL Questionnaire and the Neuropathic Pain Symptom Inventory |
|  | GI Symptom Monitoring | Your doctor monitors and records gastrointestinal (GI) symptoms such as abdominal pain, bloating, diarrhea, nausea, vomiting, quickly feeling full, and difficulty gaining weight |
|  | Other | Other assessments determined by your healthcare provider |

This information is being provided for educational purposes only and does not constitute medical advice. All medical questions should be directed to your healthcare professionals.

| | Result at Baseline | Date and Result |
|--|--------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Date of Assessment | | | | | | |
| PATIENT INFORMATION | | | | | | |
| DNA Analysis or Enzyme Assay | | | | | | |
| GENERAL | | | | | | |
| Height | | | | | | |
| Weight | | | | | | |
| Vital Signs | | | | | | |
| Blood Pressure | | | | | | |
| Heart Rate | | | | | | |
| LABORATORY TESTS | | | | | | |
| BLOOD TESTS | | | | | | |
| Lyso-GL-3 | | | | | | |
| Lipid Panel | | | | | | |
| Kidney Function Tests | | | | | | |
| Serum Creatinine | | | | | | |
| Blood Urea Nitrogen (BUN) | | | | | | |
| Glomerular Filtration Rate (GFR) | | | | | | |
| URINE TEST | | | | | | |
| Urine Protein Tests (total protein/creatinine and albumin/creatinine ratios) | | | | | | |
| CLINICAL ASSESSMENTS | | | | | | |
| Ophthalmology Evaluation | | | | | | |
| Audiology Evaluation | | | | | | |
| Brain MRI | | | | | | |
| Echocardiogram (ECHO) | | | | | | |
| Electrocardiogram (ECG) | | | | | | |
| Holter Monitoring | | | | | | |
| Cardiac MRI | | | | | | |
| Lung Function Test or Spirometry | | | | | | |
| Quality of Life | | | | | | |
| Pain Evaluation | | | | | | |
| GI Symptom Monitoring | | | | | | |
| OTHER TESTS | | | | | | |
| | | | | | | |
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| | | | | | | |

Schedule of Assessments

The below chart contains certain assessments, suggested monitoring and other testing information that your doctor may prescribe as part of your Fabry diagnosis. Actual assessments, testing or monitoring conducted by your healthcare provider may vary. Please consult with your doctor with any questions that you may have about your care plan.

| | Pediatric Patients (Under 18 Years of Age*) | | | | Adult Patients (≥18 Years of Age) | | | | |
|--|---|----------------------------------|--------------------|---------------------------------------|-----------------------------------|----------------|-----------------|--------------------|---------------------------------------|
| | UPON ENROLLMENT | EVERY 6 – 12 MONTHS ^a | EVERY 24-36 MONTHS | AT TIME OF AN EVENT OR THERAPY CHANGE | UPON ENROLLMENT | EVERY 6 MONTHS | EVERY 12 MONTHS | EVERY 24-36 MONTHS | AT TIME OF AN EVENT OR THERAPY CHANGE |
| GENERAL | | | | | | | | | |
| Medical History | X | X | | X | X | X | | | X |
| Family History | X | | X | | X | | | X | |
| Physical Exam | X | X | | X | X | X | | | X |
| Vital Signs, Height and Weight | X | X | | X | X | X | | | X |
| Blood Pressure ^b | X | X | | X | | | | | |
| Enzyme Activity and Genotype | X | | | | X | | | | |
| Enzyme Replacement Therapy Status | X | X | | X | X | X | | | X |
| Concomitant Medication Assessment | X | X | | X | X | X | | | X |
| Pediatric Quality of Life Assessment - PedsQL™ Pediatric Quality of Life Inventory | X | X | | X | | | | | |
| Pediatric Quality of Life Assessment - PedsQL™ Multidimensional Fatigue Scale | X | X | | X | | | | | |
| Pediatric Pain Assessment - PedsQL™ Pediatric Pain Questionnaire™ | X | X | | X | | | | | |
| Quality of Life (SF-36®, BPI) | | | | | X | X | | | X |
| LABORATORY TESTS | | | | | | | | | |
| Glomerular Filtration Rate (GFR) ^c | X | | X | X | X | | | | |
| Albuminuria and Proteinuria ^d | X | X | | X | X | | | | |
| Serum Creatinine ^e and BUN | | | | | X | X | | | X |
| Urine Protein Excretion™ | | | | | X | X | | | X |
| Lipid panel | | | | | X | | X | | |
| OTHER STUDIES | | | | | | | | | |
| Audiologic Evaluation ^g | X | | X | X | X | | | X | X |
| Cranial MRI – T1, T2 and FLAIR | X | | X ^f | X ^{f1} | X | | | X | X ^{f1} |
| Electrocardiogram ^{g2} | X | | X | X | X | | X | | X |
| Echocardiogram ^h | X | | X | X | X | | X | | X |
| 24-Hour Holter Monitoring ^g | | | | | X | | X | | X |
| Cardiac MRI ^{h4} | X | | X | X | X | | X ^{h1} | X ^{h1} | X ^{h2} |
| Respiratory – Spirometry Exam ⁱ | | | | | X | | | X | |
| Ophthalmology – Slit Lamp Exam ^j | X | | X | | X | | | | |
| SPECIALIZED LABORATORY TESTS | | | | | | | | | |
| Plasma GL-3 (Gb-3) and plasma, serum or DBS lyso-GL-3 (lyso-Gb-3) | Samples for GL-3 (Gb-3) or lyso-GL-3 (lyso-Gb-3) determination should be collected prior to the first ERT infusion, then every 3 months for the first 18 months of treatment, and then every 6 months thereafter. | | | | | | | | |
| Antibody Testing | Serum samples for IgG testing should be drawn prior to the first infusion, then every 3 months for the first 18 months of treatment, then every 6 months until 2 consecutive negative results are confirmed. | | | | | | | | |
| ADVERSE EVENTS | | | | | | | | | |
| Adverse Event Monitoring ^k | Continuous. | | | | | | | | |

The Recommended Schedule of Assessments represents the core Fabry disease-related assessments that allow evaluation of a patient's disease progression over time. Physicians will determine the actual frequency of necessary assessments according to a patient's individualized need for medical care and routine follow-up.

* Initiation of Laboratory Tests, Imaging, and Other Studies: There is variability in the clinical complications and progression of Fabry disease. Children are at risk for life threatening complications. There are no biomarkers available to discern mildly affected from severely affected patients. In children with a family history of early presenting or severe disease, complete evaluations should be done at the time of diagnosis. Other patients should be completely evaluated at no later than 5 years of age.

^a Patients receiving ERT are recommended to undergo these evaluations every 6 months; for those not on ERT or with milder disease, once per year may be sufficient.

^b Blood pressure should be measured 3 times at each assessment; only the last 2 measurements should be recorded.

^c GFR should be measured directly every 24–36 months until age 15, and annually thereafter. If direct measurement is not possible, serum creatinine levels should be obtained at the recommended intervals for an estimation of GFR, which is a less sensitive method.

^d First morning voided urine for protein, albumin and creatinine in order to calculate a protein/creatinine ratio and albumin/creatinine ratio. Protein, albumin, and creatinine measurements can also be performed on timed samples (e.g. 24 hours).

^e Audiologic evaluation should be performed at the earliest age that is practical.

^f Cranial MRIs should be performed at ages 10, 15, and 18 years.

^{f1} At the time of a cerebrovascular event, a cranial MRI should also include diffused weighted images and apparent diffusion coefficient (DWI/ADC).

^g Electrocardiogram should be performed starting at age 10–12 years. If abnormal and/or clinical symptoms arise, Holter monitoring is recommended.

^h Echocardiogram should be performed starting at age 10–12 years.

^{h1} Cardiac MRI is recommended to be performed in patients under age 25 if cardiac hypertrophy or significant arrhythmia is present.

^j Monitor yearly if retinal vessel tortuosity noted.

^k See Section 15.1 of the Fabry Registry protocol for specific AE reporting guidelines and instructions.

^l Directly measuring glomerular filtration rate (GFR) is recommended if a more precise evaluation is desired.

^m 24 hour or first morning void urine for protein, creatinine and albumin.

ⁿ At the time of an event, a cranial MRI should also include diffused weighted images and apparent diffusion coefficient (DWI/ADC).

^o If electrocardiogram is abnormal and/or clinical symptoms arise, Holter monitoring is recommended.

^p Annual 24-hour Holter monitoring is recommended for males 30 years of age or older and females 40 years of age or older.

^q Cardiac MRI is recommended at Fabry diagnosis for patients ages 25 and older. It is recommended to be performed under age 25 if cardiac hypertrophy or significant arrhythmia is present.

^{q1} If first MRI is abnormal: 1) patients with moderate or severe LVH receiving ERT should have MRI annually; 2) patients with significant arrhythmia should have MRI at least every 2 years or at frequency factoring cardiac disease severity and the physician's clinical judgment; 3) males with no or mild LVH receiving ERT should have MRI every 2 years.

^{q2} If first MRI is normal, repeat every 5 years or earlier if ECG/ECHO results are abnormal on annual exam.

^r If spirometry is abnormal, perform yearly.

Additional studies may be recommended for individuals with more cardiac or renal involvement:

Brain Natriuretic Peptide (BNP), Bone Density, Loop Recorder, Vitamin D

If an MRI is contraindicated, a CT scan may be recommended

Monitoring Your Health

Since you have Fabry disease, your healthcare providers will likely want to see you regularly to monitor your health. Fabry disease is progressive, meaning it can get worse over time. Therefore, it is important to track your health and let your healthcare providers know if you have any new or worsening symptoms.

Just a phone call or email away

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