

# Minimum Recommendations for Monitoring Patients With Nonneuronopathic (Type 1) Gaucher Disease

## Initial Assessment<sup>1,2</sup>

| Blood Tests  |  |                             |
|--|--|-----------------------------|
| PRIMARY TESTS  | ADDITIONAL TESTS AS INDICATED <sup>5</sup> |                             |
| Hemoglobin   | AST and/or ALT                             | Albumin                     |
| Platelet count   | Alkaline phosphatase                       | Total protein               |
| Biochemical markers <sup>3</sup>   | Calcium                                    | Serum immunoelectrophoresis |
| • Chitotriosidase  | Phosphorus                                 | Iron                        |
| • ACE  | PT   | Iron-binding capacity       |
| • TRAP   | PTT  | Ferritin                    |
| Mutation analysis  | WBC  | Vitamin B <sub>12</sub>     |
| Antibody sample <sup>4</sup>   | Total and direct bilirubin                 |                             |
| Visceral <sup>6</sup>  |  |                             |
| Spleen volume (volumetric MRI or CT)   |  |                             |
| Liver volume (volumetric MRI or CT)  |  |                             |
| Skeletal   |  |                             |
| MRI (coronal; T <sub>1</sub> - and T <sub>2</sub> -weighted ) of entire femora <sup>7</sup>                    |  |                             |
| X-ray: AP view of entire femora <sup>7</sup> and lateral view of spine   |  |                             |
| DEXA: lumbar spine and femoral neck  |  |                             |
| Bone age (for patients aged ≤14 years) <sup>5</sup>  |  |                             |
| Pulmonary <sup>8</sup>   |  |                             |
| ECG, chest X-ray, and Doppler echocardiogram (right ventricular systolic pressure) for patients aged >18 years |  |                             |
| Quality of Life  |  |                             |
| Patient-reported functional health and well-being (SF-36 Health Survey)  |  |                             |

## Ongoing Monitoring<sup>2</sup>

|   | Patients Not on Enzyme Therapy | Patients on Enzyme Therapy     |            |                            |   |   |
|---|--------------------------------|--------------------------------|------------|----------------------------|---|---|
|   |                                | Not Achieved Therapeutic Goals |            | Achieved Therapeutic Goals | At Time of Dose Change or Significant Clinical Complication |   |
|   | Every 12 Mo                    | Every 12-24 Mo                 | Every 3 Mo | Every 12 Mo                | Every 12-24 Mo  |   |
| Comprehensive physical examination  | X                              |                                |            | X                          | X (Annual)  |   |
| SF-36 (QoL) Survey  | X                              |                                |            | X                          | X (Annual)  | X |
| Blood Tests   |                                |                                |            |                            |   |   |
| Hemoglobin  | X                              |                                | X          |                            | X   | X |
| Platelet count  | X                              |                                | X          |                            | X   | X |
| Biochemical markers <sup>3</sup>  | X                              |                                | X          |                            | X   | X |
| • Chitotriosidase   |                                |                                |            |                            |   |   |
| • ACE   |                                |                                |            |                            |   |   |
| • TRAP  |                                |                                |            |                            |   |   |
| Additional Blood Tests <sup>5</sup>   |                                |                                |            |                            |   |   |
| Visceral <sup>6</sup>   |                                |                                |            |                            |   |   |
| Spleen volume (Volumetric MRI or CT)  |                                | X                              |            | X                          | X   | X |
| Liver volume (Volumetric MRI or CT)   |                                | X                              |            | X                          | X   | X |
| Skeletal <sup>9</sup>   |                                |                                |            |                            |   |   |
| MRI of entire femora (Coronal; T <sub>1</sub> - & T <sub>2</sub> -weighted) <sup>7,11</sup> |                                | X                              |            | X                          | X   | X |
| X-ray <sup>7,10</sup>   |                                | X                              |            | X                          | X   | X |
| DEXA  |                                | X                              |            | X                          | X   | X |
| Pulmonary <sup>8</sup>  |                                |                                |            |                            |   |   |

1. A complete patient and family history, preferably including a pedigree, should be conducted.
2. A comprehensive physical examination should be performed at least annually.
3. One or more of these biochemical markers should be consistently monitored at least every 12 months and in conjunction with other clinical assessments of disease activity and response to treatment. Of the three recommended markers, chitotriosidase, when available as a validated procedure from an experienced laboratory, may be the most sensitive indicator of changing disease activity, and is therefore preferred.
4. A baseline sample will be drawn and stored at Genzyme. A subsequent sample is suggested to be drawn at 6 months after starting Cerezyme® (imiglucerase for injection) but is optional. The baseline and additional samples will be tested only if clinically indicated, such as for a suspected immune-mediated adverse event, prior to a switch to home therapy, or for suspected loss of effectiveness of Cerezyme®.
5. These should be followed appropriately if abnormal based on each patient's age and clinical status.
6. Obtain contiguous transaxial 10 mm-thick sections for sum of region of interest.
7. AP view of the entire femora (optimally from hips to below knees), and lateral view of the spine.
8. Pulmonary assessments are recommended every 12-24 months for patients with borderline or above normal pulmonary pressures at baseline.
9. Anatomical sites not included here should be evaluated if symptoms develop in such locations.
10. Optional in absence of new symptoms or evidence of disease progression.

Abbreviations: ACE, angiotensin-converting enzyme; ALT, alanine aminotransferase; AP, anteroposterior; AST, aspartate aminotransferase; CT, computed tomography; DEXA, dual-energy X-ray absorptiometry; ECG, electrocardiogram; MRI, magnetic resonance imaging; PT, prothrombin time; PTT, partial thromboplastin time; TRAP, tartrate resistant acid phosphatase; WBC, white blood cell

# Therapeutic Goals\*

## Bone Disease

| Patients     | Goal   | Timeframe    |
|--------------|--|--------------|
| All patients | <ul style="list-style-type: none"> <li>■ Lessen or eliminate bone pain</li> <li>■ Prevent bone crises</li> </ul> | Years 1 to 2 |

For more information about bone disease, including

- osteonecrosis
- subchondral joint collapse
- skeletal mass
- cortical bone mineral density
- trabecular bone mineral density

please contact Genzyme Medical Information at 1-800-745-4447.

## Anemia

| Patients                           | Goal  | Timeframe    |
|------------------------------------|---|--------------|
| Adult female patients and children | ■ Hb $\geq$ 11.0 g/dL   | Years 1 to 2 |
| Male patients >12 y                | ■ Hb $\geq$ 12.0 g/dL   | Years 1 to 2 |
| All patients                       | <ul style="list-style-type: none"> <li>■ Eliminate blood transfusion dependency</li> <li>■ Reduce fatigue</li> <li>■ Maintain improved Hb levels</li> </ul> |              |

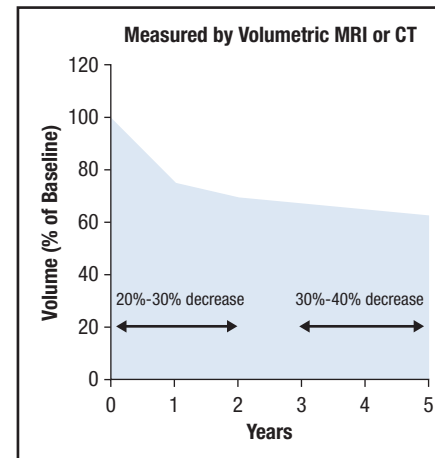
## Thrombocytopenia

| Patients                               | Goal                                       | Timeframe |
|--|--|-----------|
| All patients                           | ■ Sufficient platelets to reduce bleeding  | Year 1    |
| Splenectomized patients                | ■ Normalization of platelet counts         | Year 1    |
| Intact spleen                          |  |           |
| Moderate thrombocytopenia <sup>†</sup> | ■ Low-normal platelet counts               | Year 2    |
| Severe thrombocytopenia <sup>‡</sup>   | ■ Continued increases but no normalization | Year 2    |

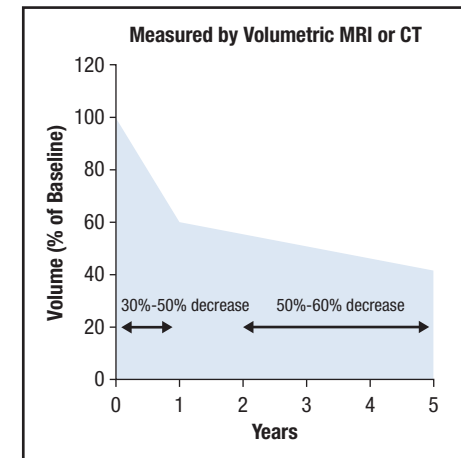
<sup>†</sup>>60,000-<120,000 mm<sup>3</sup>

<sup>‡</sup><60,000 mm<sup>3</sup>

## Hepatomegaly



## Splenomegaly



## Cerezyme® (imiglucerase for injection)

### Indications and Usage

■ Cerezyme® is indicated for long-term enzyme replacement therapy (ERT) for pediatric and adult patients with a confirmed diagnosis of type 1 Gaucher disease that results in one or more of the following conditions:

- anemia
- thrombocytopenia
- bone disease
- hepatomegaly or splenomegaly

### Important Safety Information

Adverse reactions related to Cerezyme® (imiglucerase for injection) administration have been reported in less than 15% of patients. Each of the following events occurred in less than 2% of the total patient population. Reported adverse events include nausea, vomiting, abdominal pain, diarrhea, rash, fatigue, headache, fever, dizziness, chills, backache, and tachycardia. Adverse events associated with the route of administration include discomfort, pruritus, burning, swelling or sterile abscess at the site of venipuncture. Symptoms suggestive of hypersensitivity include anaphylactoid reaction, pruritus, flushing, urticaria, angioedema, chest discomfort, dyspnea, coughing, cyanosis and hypotension. Approximately 15% of patients have developed IgG antibodies; periodic monitoring is suggested. Side effects should be reported promptly to Genzyme Medical Affairs at 800-745-4447, option 2. To learn more, please see full product information, contact Genzyme at 1-800-745-4447, or visit [www.cerezyme.com](http://www.cerezyme.com).

For more information on therapeutic goals, please contact Genzyme Medical Information at 1-800-745-4447.

\*Pastores GM, Weinreb NJ, Aerts H, et al. Therapeutic goals in the treatment of Gaucher disease. *Semin Hematol.* 2004;41(4 Suppl 5):4-14.