To diagnose, treat, and manage patients with acromegaly can be challenging due to the variable nature of the disorder and the range of possible symptoms presented.1,2 The goal of this brochure is to provide guidance for health care professionals (HCPs) to diagnose and manage patients with acromegaly based on the latest Endocrine Society Clinical Practice Guidelines.1
Management of Acromegaly

1. Achieving an age-normalized serum IGF-1 value
2. Achieving a random GH <1 µg/L
3. Maintaining the same GH and IGF-1 assay in the same patient throughout management

Goals of management

1. Achieving an age-normalized serum IGF-1 value
2. Achieving a random GH <1 µg/L
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Management algorithm for acromegaly

An individualized treatment approach is vital for treating and managing patients with acromegaly due to the variable nature of the disorder. The Endocrine Society developed an algorithm for an integrated multidisciplinary therapeutic approach to help HCPs in managing patients with acromegaly.

Causes of acromegaly

- More than 95% of patients with acromegaly have a pituitary adenoma type that causes growth hormone (GH) hypersecretion leading to excess production of insulin-like growth factor 1 (IGF-1). Characteristic clinical signs of acromegaly result from the mass effects of the adenoma as it grows in size and from overproduction of GH and IGF-1 hormones.

Diagnosis

To diagnose acromegaly, the 2014 Endocrine Society Clinical Practice Guidelines recommend:

1. Measuring IGF-1 levels in patients with typical clinical manifestations of acromegaly, especially those with acral and facial features
2. Measuring serum IGF-1 to rule out acromegaly in a patient with a pituitary mass
3. Not relying on random GH levels to diagnose acromegaly
4. Confirming the diagnosis in patients with elevated or equivocal serum IGF-1 levels by finding lack of suppression of GH to <1 µg/L following documented hyperglycemia during an oral glucose load

OGTT, oral glucose tolerance test; MRI, magnetic resonance imaging; SSA, somatostatin analog; DA, dopamine agonist; SRT, stereotactic radiation therapy.

*Treatment considerations in the approach to a patient with acromegaly. This approach refers to management of a patient with a pituitary adenoma.

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Causes of acromegaly

While the enlarging adenoma produces headaches, visual field defects, and hypopituitarism, the excess of GH leads to conditions such as acral overgrowth, changes in soft tissue, glucose intolerance, heart disease, and hypertension. The result is a multisystem disease associated with somatic overgrowth, multiple comorbidities, premature mortality, and physical disfigurement.

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Management algorithm for acromegaly

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Elevated GH and IGF-1 levels lead to increased morbidity, decreased quality of life, and reduced life expectancy in patients with acromegaly. The consequences of uncontrolled acromegaly are serious because patients with acromegaly experience an approximately 2-fold excess mortality due to comorbidities such as diabetes and hypertension, as well as cardiovascular, cerebrovascular, respiratory, and some malignancy-related conditions. In addition, duration of disease prior to diagnosis has been found to influence mortality.

Following diagnosis, transsphenoidal surgery is first-line therapy for most patients. However, surgery alone may not provide adequate long-term control of acromegaly; the overall rate of remission—control of the disease—after surgery ranges from 55% to 80%.

According to treatment guidelines, medical therapy is recommended for use if surgery has failed to achieve biochemical control of the disease. IGF-1 and GH levels can remain elevated in patients receiving medical therapy, which emphasizes the importance of monitoring GH and IGF-1 levels.
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Increased risks for patients with acromegaly

- **86%** valve abnormalities
- **48%** complex ventricular arrhythmias
- **51%** cardiac hypertrophy
- **40%** hypertension
- **20%-80%** obstructive sleep disorders
- **19%-56%** diabetes mellitus
- **98%** acral/facial changes
- **~70%** joint arthropathy
- **55%-80%** of patients achieve remission after surgery
- **45%** of patients receiving medical therapy remain uncontrolled

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The Endocrine Society recommends regular monitoring throughout treatment and management of patients with acromegaly.\(^1\)

### Consistent and accurate monitoring of GH and IGF-1 is important\(^1\)

<table>
<thead>
<tr>
<th>Treatment stage</th>
<th>Frequency</th>
<th>Test specifications(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>After surgery</td>
<td>No sooner than 12 weeks</td>
<td>IGF-1 and random GH, Measuring a nadir GH level after a glucose load in a patient with GH &gt;1 µg/L</td>
</tr>
<tr>
<td>After initiation of medical therapy</td>
<td>12 weeks</td>
<td>Serum IGF-1 and GH</td>
</tr>
<tr>
<td>After initiation of radiotherapy and cessation of medical therapy</td>
<td>Annually</td>
<td>IGF-1 and GH</td>
</tr>
<tr>
<td>After remission is achieved</td>
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<td>IGF-1 and random GH</td>
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### Ensure accuracy through consistent assay use

Using different assays can lead to inconsistent results. At any specific point in time, different assays measure different levels of GH. Even in healthy patients, a variation in results is observed when different assays are used to measure GH at the same time.\(^13\)

- **Patients with uncontrolled acromegaly**\(^13\)
- **Healthy participants**\(^13\)

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The potential variability in results from different GH and IGF-1 assays necessitates the use of the same assay in the same patient if possible throughout management.\(^1\)

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Overcoming the challenges of acromegaly disease management involves tailoring therapy to optimize long-term biochemical control.\(^11\) The latest Endocrine Society Clinical Practice Guidelines provide guidance for HCPs in diagnosing, treating, and managing patients with acromegaly.\(^1\)

### Key points to remember

- **Diagnosis**\(^1\)
  - Measure IGF-1 levels in patients with typical clinical manifestations of acromegaly—especially those with acral and facial features
  - Measure serum IGF-1 to rule out acromegaly in a patient with a pituitary mass
  - Do not rely on random GH levels to diagnose acromegaly

- **Treatment goals**\(^1,2\)
  - Achieve biochemical control—random GH <1 µg/L and normalized IGF-1—because these have been shown to correlate with mortality risk reduction
  - Attenuate symptoms
  - Control tumor volume and maintain pituitary function

- **Management goals**\(^1\)
  - Monitor for random GH level <1 µg/L
  - Monitor for age- and sex-normalized IGF-1 level
  - Maintain GH and IGF-1 assay consistency throughout management

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Please visit www.endocrine.org to download “Acromegaly: An Endocrine Society Clinical Practice Guideline.”

To learn more about acromegaly, visit www.acromegalyinfo.com.
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| After initiation of medical therapy          | 12 weeks             | Serum IGF-1 and GH                                                                                   |
| After initiation of radiotherapy and cessation of medical therapy | Annually             | IGF-1 and GH                                                                                         |
| After remission is achieved                   | Annually             | IGF-1 and random GH                                                                                   |

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[Graphs showing GH levels over time for both groups with different assays used.]

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