

## INTRODUCTION

The information contained in this booklet will provide answers to some of the questions you may have about growth hormone and growth hormone deficiency. It will also help you identify some of the questions you should discuss with your doctor. We have included some frequently asked questions to help give you as much information as possible about growth hormone replacement and what to expect during therapy.

## WHAT IS HYPOPITUITARISM?

Hypopituitarism is a disorder in which all or part of the pituitary gland does not work as it should, causing a lack of certain hormones in the body.



## WHAT IS THE PITUITARY GLAND?

The pituitary gland is a small gland that is found at the base of the brain. It is often referred to as the "master" gland as it controls the function of other glands in the body and is responsible for the production of many of the important hormones in our bodies. If the pituitary gland is injured or not functioning well, hormone imbalances or deficiencies can occur.



The pituitary gland

## WHAT CAUSES HYPOPITUITARISM?

Hypopituitarism can be caused by pre-existing conditions, or it can be the result of an injury to the pituitary gland from a head trauma. It is commonly encountered in patients following pituitary surgery or cranial radiation therapy to the pituitary gland for the treatment of a benign (non-cancerous) pituitary tumour.

### **Hormone deficiencies that may be present in hypopituitarism:**

- Growth hormone deficiency
- Gonadotropins (LH and FSH) and sex hormone (e.g., estrogen and testosterone) deficiencies
- Adrenocorticotrophic hormone (ACTH) and cortisol deficiencies
- Thyroid-stimulating hormone (TSH) and thyroid hormone deficiencies
- Vasopressin (anti-diuretic hormone [ADH]) deficiency and associated diabetes insipidus

## WHAT IS GROWTH HORMONE?

Growth hormone is one of many hormones produced by the human body. It is produced specifically by the pituitary gland throughout our lives. Growth hormone plays an important role in sustaining lean body mass (components of lean body mass include: water, organ tissue, muscle mass, and blood components), breaking down fat tissue in adults, and stimulating growth in children. It is usually the first hormone to be deficient in individuals with hypopituitarism.



## WHAT IS GROWTH HORMONE DEFICIENCY?

Growth hormone deficiency occurs when the pituitary gland, which produces many of the hormones that help keep us feeling well, is injured or does not function properly and does not produce adequate amounts of growth hormone. Growth hormone deficiency can be recognized by a number of symptoms, however growth hormone testing is required for a definite diagnosis.



## WHAT ARE THE SYMPTOMS OF GROWTH HORMONE DEFICIENCY?

If you have had pituitary surgery or if you have any of the previously described conditions, you may be experiencing the following symptoms:

- Low energy level<sup>1</sup>
- Decreased physical activity<sup>1,2,3</sup>
- Difficulty concentrating or loss of memory<sup>4</sup>
- Moodiness or difficulty relating to others<sup>1,4</sup>
- Withdrawal from friends and family<sup>1,4</sup>
- Loss of interest in sexual activity<sup>2,3,4</sup>

**Any of these symptoms may be indicators of hypopituitarism and growth hormone deficiency. If you experience any of these symptoms you should speak to your endocrinologist about testing for growth hormone deficiency.**





## WHAT CAN I EXPECT FROM GROWTH HORMONE REPLACEMENT THERAPY?

Generally speaking, you can expect an improvement in your overall well-being, helping you to return to your normal lifestyle. Your energy level may increase, and you may experience a change in body shape as your lean muscle increases and fat decreases. In time, you may notice significant and sustained improvements in your lipid profile.<sup>6</sup> The benefits of growth hormone replacement vary from person to person, and it may take three to six months before the maximum effects are realized.



## WHAT IS RECOMBINANT GROWTH HORMONE (SOMATROPIN)?

Somatropin is a biosynthetic form of human growth hormone identical to the growth hormone that is produced by your pituitary gland. Replacing growth hormone in your body helps to ease the symptoms you may be experiencing due to growth hormone deficiency, helping you to return to your normal lifestyle. In adults, growth hormone replacement therapy may improve physical mobility and social isolation associated with growth hormone deficiency. Individual responses to growth hormone replacement therapy vary, and the benefits of therapy can take up to three to six months to take effect.



## THE BENEFITS OF GROWTH HORMONE REPLACEMENT THERAPY



APPROX. 4-6 WEEKS

You may experience an improvement in both your mood and your energy level, helping you to return to your normal lifestyle.<sup>7</sup>



APPROX. 3-6 MONTHS

Next you may notice a change in your body shape as your lean muscle mass increases and fat decreases.<sup>8</sup>



APPROX. 6-9 MONTHS

As time progresses, you may experience improvements in your cardiovascular health, including improvements in heart function.<sup>7,8</sup>



APPROX. 18-24 MONTHS

Over time, your treatment may have positive effects on bone density.<sup>9</sup>

## HOW IS RECOMBINANT GROWTH HORMONE ADMINISTERED?

Somatropin is a synthetic protein. It cannot be taken orally because proteins break down in the stomach, leaving the body unable to absorb the hormone properly. Therefore, all recombinant growth hormones are administered by subcutaneous (under the skin) injections nightly.<sup>1</sup>



## ARE THERE ANY SIDE EFFECTS?

There are potential side effects associated with any medication, but fortunately the side effects associated with growth hormone replacement are generally mild and dose-related. Some people have reported mild swelling of the fingers, hands, and feet at the beginning of treatment. This is caused when the body retains fluid, which is usually a temporary and transient occurrence. The following events occurred infrequently: headache, localized muscle pain, weakness, mild hyperglycemia and glucosuria. If you experience any of these symptoms, and they persist, be sure to seek your doctor's advice. A reduction of your somatropin dose may be necessary.



## WHAT IF I HAVE OTHER QUESTIONS?

If you have questions regarding growth hormone deficiency, growth hormone replacement therapy, or any of the information contained in this booklet, be sure to talk to your doctor.

For questions about recombinant growth hormone, call Eli Lilly Canada at 1-888-545-5972.



## PITUITARY HORMONE REPLACEMENT

**Adrenocorticotrophic hormone (ACTH):** This hormone regulates the production of cortisol by the adrenal glands. Cortisol influences how the body uses carbohydrates, fat and protein, and how it maintains fluid balance.

**Diabetes insipidus:** A disorder caused by a deficient amount of anti-diuretic hormone (vasopressin, see below) being released from the pituitary gland or by the body's inability to respond to the diuretic hormone that is produced.

**Gonadotropins (LH and FSH):** These hormones have a number of roles, including stimulating the production of estrogen and eggs from the ovaries, and testosterone and sperm from the testes.

**Thyroid-stimulating hormone (TSH):** This hormone stimulates the thyroid gland to produce thyroid hormones. In turn, thyroid hormones help regulate how the body uses energy.

**Vasopressin (anti-diuretic hormone [ADH]):** This hormone plays a critical role in the body, acting on the kidneys to maintain proper fluid balance.

**If you are currently prescribed two or more of the above hormone therapies, you should speak to your doctor about growth hormone deficiency.**