

# MAGIC NZ

Supporting Children with Growth Disorders  
and their Families



[www.magicnz.org.nz](http://www.magicnz.org.nz)

## *Growth Hormone Deficiency*

### Introduction

One of the causes of growth failure is Growth Hormone Deficiency (GHD). Growth hormone is secreted by the pituitary and is one of a number of hormones affecting a child's growth. A dysfunction in the pituitary gland causing underproduction of growth hormone results in abnormally short stature. In most cases, no underlying cause for the deficiency is found.

Sometimes there is a deficiency of other pituitary hormones resulting in Hypopituitarism. For more information, refer to The MAGIC Foundation brochures, "Congenital Hypopituitarism" and "Clinical Hypopituitarism".

### Growth Pattern

A growth hormone deficient child usually shows a growth pattern of less than 2 inches a year. In many cases the child will grow normally until the age of 2 or 3 and then begin to show signs of delayed growth. Other children will experience growth failure earlier or later than this age range. When growth failure occurs, the child's growth plateaus or is minimal, and the child's height drops down the percentiles on the height-for-age growth chart.

Though much smaller than their peers, children with Growth Hormone Deficiency have normal body proportions and often look younger than their peers. For many GHD children, weight is at a higher percentile on the growth chart than height, though some cases of Growth Hormone Deficiency have been diagnosed for children of low weight.

### **Normal growth rates for height in children are:**

Age	Growth in Height
0-6 months	17.5 – 25.5 cm/yr (7-10 inches/yr)
6-12 months	15.2 – 17.5 cm/yr (6-7 inches/yr)
1-2 years	10 – 12.7 cm/yr (4-5 inches/yr)
2-3 years	7.6 – 10 cm/yr (3-4 inches/yr)
3-4 years	5 – 7.6 cm/yr (2-3 inches/yr)
4-10 years	5 cm/yr (2 inches/yr)

### Diagnosis

When a parent first suspects that their child has growth failure, a paediatrician or paediatric endocrinologist should examine the child (ask for a referral from your GP). A paediatric endocrinologist is trained in growth issues and can perform several tests to determine the reason for your child's growth failure.

The following steps are usually taken before the child is tested for Growth Hormone Deficiency:

- when available, previous growth measurements should be evaluated,
- bone age (x-ray of a child's hand and wrist) should be taken, and
- blood samples should be assessed for possible thyroid hormone deficiency.

### **Growth Hormone Stimulation Test**

Testing for Growth Hormone Deficiency will occur when other possibilities of short stature have been ruled out. A child's growth hormone secretion will be stimulated by one of several agents such as clonidine and Ldopa. The release of growth hormone may also be measured over a period of 8-12 hours, since growth hormone secretion varies throughout the day and is greatest after falling asleep.

### ***Early Diagnosis Extremely Important***

Early diagnosis is extremely important for a growth hormone deficient child. In order to obtain the best outcome, a child must be diagnosed and treated at a relatively young age. Accurate annual measurements and plotting of a child's growth chart allows for identification of growth failure and treatment before the child's bones fuse. Once fusing has taken place, no additional growth is possible.

If your child is diagnosed late, refer to the section later in this brochure on delaying puberty for more information. A child who is diagnosed in late childhood can be treated and gain an improved outcome as long as the bones have not fused.

## **Treatment**

### ***Growth Hormone Therapy***

Once diagnosed with Growth Hormone Deficiency, the child is treated with synthetic growth hormone through Growth Hormone Therapy (GHT). Since the mid-1980s, growth hormone has been produced in laboratories and is now available in unlimited quantities. In New Zealand, Growth Hormone Deficiency is one of the categories included in the entry criteria for GHT.

Though every child may not react similarly to GHT, the majority of Growth Hormone Deficient children under therapy today reach a normal adult height or nearly their full growth potential. GHT is given by injection, either daily or several times per week. Parents are trained to give these injections. The injection is not very painful; some parents even give it while their child sleeps (without the child waking up). Once they are comfortable with it, older children can administer their own injection.

### ***Delaying Puberty***

Even if your child is diagnosed in late, rather than early, childhood, treatment and improved outcome is still possible as long as the bones have not fused. It is possible to combine growth hormone therapy with treatment to delay puberty (with Lucrin Depot or other drugs) to maximize your child's growth potential. A child who is diagnosed and treated later in childhood can gain valuable growing time with this combined treatment. Your paediatric endocrinologist can explain this in more detail. Advocate for your child to ensure that everything possible will be done to achieve the best possible outcome.

## **Social Issues**

Short stature can be difficult for a child and his/her family. Children who are much shorter than their peers may experience both physical and emotional problems. Be understanding, and keep the lines of communication open with your child so they feel comfortable talking with you. Offer assistance when necessary, but it is extremely important to treat your child according to their age, not according to their size.

For a more in-depth discussion, refer to The MAGIC Foundation brochure, "Psychosocial Issues of Growth Delayed Children."

## **Adult Growth Hormone Deficiency**

When your child reaches adulthood, he/she should be regularly monitored for signs of adult growth hormone deficiency (AGHD). Besides height, growth hormone regulates several metabolic functions in the body and affects psychological well being. Not all children who are GHD will go on to have AGHD.

Treatment for AGHD is available and can greatly improve physical and psychological health. If your child has GHD, be sure to discuss AGHD with your child's endocrinologist as he/she approaches adulthood.

## **A Note to Parents**

If your child has growth hormone deficiency, you may have a lot of confusion or be frightened regarding the well being of your child. As a concerned parent, you probably wish to learn as much as you can and what you and your healthcare professional can do to help your child.

### ***Advocate for Your Child***

Most importantly, be your child's #1 advocate, trust your parental gut instinct and love your child. The appropriate medical care under the proper specialists will greatly improve your child's outcome.

### ***Ask Questions***

You will probably have questions that are specific to your child. Leave no questions unanswered, even if you think the questions are simple or silly. Don't be afraid to ask questions or get a second opinion from another specialist. A greater understanding will allow you to provide optimal care for your child.

### ***Network***

Coping with the special attention necessary to care for a child with growth hormone deficiency can be overwhelming, especially if you try to face it alone. Day-to-day issues can be less stressful if you are in contact with other families who "have been there". MAGIC NZ can put you in touch with other families affected by growth hormone deficiency.

For more information visit [www.magicnz.org.nz](http://www.magicnz.org.nz), email [jan@magicnz.org.nz](mailto:jan@magicnz.org.nz)  
or write to MAGIC NZ, PO Box 1493, Wellington.

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