

## What are the symptoms of Cushing syndrome in children?

It is important to remember that not all people experience the exact same symptoms and that many symptoms are not specific to Cushing syndrome; but are also seen in conditions such as obesity or other endocrine or metabolic syndrome. In children, rapid weight gain accompanied by slowing of linear growth (height) is a hallmark feature. Other clinical signs or symptoms include: round face with facial redness (plethora), increased fine downy hair on the face and body, fat pad around the temples or at the base of the neck ("buffalo hump"), purple stretch marks, darkening of the skin around neck and skinfolds (acanthosis nigricans), and high blood pressure.

## How is Cushing syndrome diagnosed?

A good screening test for Cushing syndrome in children is a 24-hour urine collection for free cortisol and creatinine. The results must be adjusted for the child's body size. A low-dose dexamethasone test is also useful to screen for Cushing syndrome. This test involves giving one milligram of dexamethasone (a glucocorticoid/steroid) at 11PM (dose is adjusted for the child's weight), and measuring cortisol in the blood the following morning by 9AM. The low-dose dexamethasone test has not been validated extensively in children, but results of a study at the NIH show that the cortisol should be less than 1.8mcg/dL the

morning after the dexamethasone was given.

Also, the collection of saliva at bedtime and in the morning on several days to test for cortisol may be useful. The best inpatient-screening test is measurement of blood cortisol at midnight.

## How is Cushing syndrome treated?

A child suspected to have Cushing syndrome must be referred to a pediatric endocrine team that is experienced with Cushing syndrome to confirm the diagnosis and perform the testing needed to determine the source of the excess cortisol production. Surgery is the first line of treatment for pituitary or adrenal tumors, and in the hands of an experienced healthcare team there is a high rate of success.

## Follow-up care

Early identification and treatment of Cushing syndrome is important to minimize any long-term effects, particularly for growth. Goals after treatment include: optimize growth and pubertal development, normalize body composition, and promote psychological health and cognitive maturation. Behavioral and mood changes are common before and after treatment, so it is important to reassure your child that moodiness and fatigue are common as the body and brain adjust to changes in cortisol levels.

## PICTURES: before and after

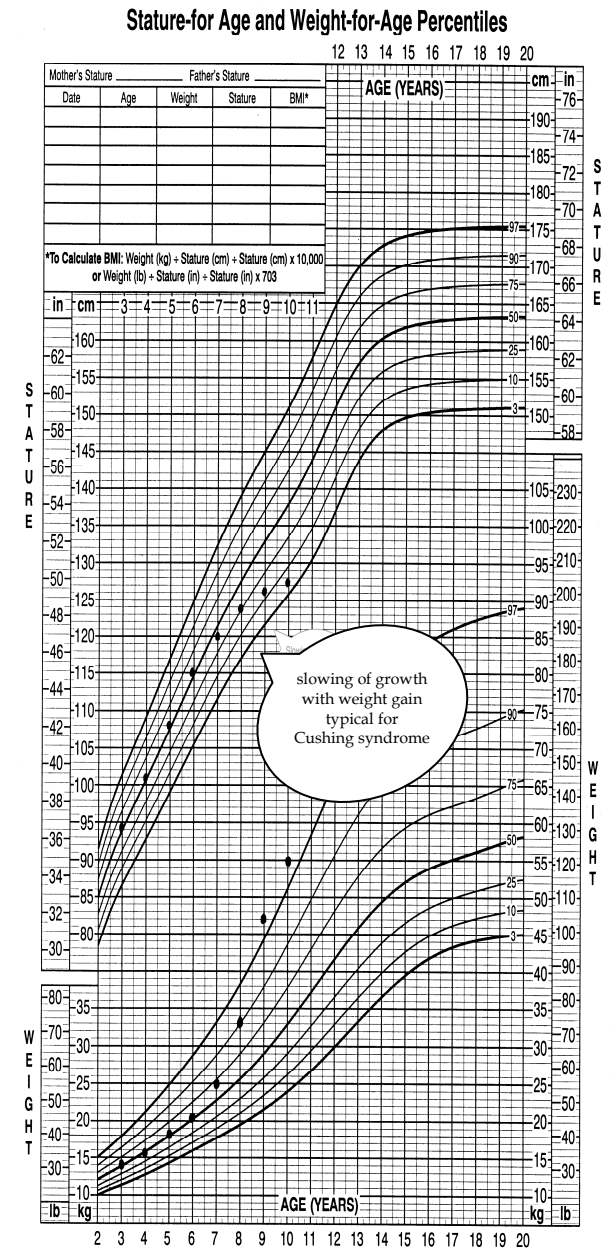
Comparison



4th Birthday



5th Birthday



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The MAGIC Foundation is a national nonprofit organization created to provide support services for the families of children afflicted with a wide variety of chronic and/or critical disorders, syndromes and diseases that affect a child's growth. Some of the diagnoses are quite common while others are very rare.

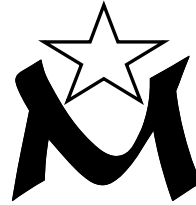
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## **Cushing Syndrome in Childhood**



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### **Resources:**

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## **Cushing Syndrome in Childhood**

### ***What is Cushing syndrome?***

Cushing syndrome occurs when the body is exposed to excess cortisol (glucocorticoid). The most common cause of Cushing syndrome is from the prolonged use of medications that are used to treat medical conditions such as asthma or arthritis. Cushing syndrome may be caused by overproduction of cortisol from the adrenal glands due to a tumor in the pituitary or adrenal gland(s), or rarely, in other sites in the body. In young children, the most common cause of Cushing syndrome is an adrenal tumor, while in older children, Cushing syndrome is more commonly due to a pituitary tumor. Bilateral adrenal nodular adrenal disease may also cause CS and symptoms may be periodic or 'cyclical'.

### ***What should I do if I suspect my child may have Cushing syndrome?***

Talk to your child's pediatric healthcare provider about your concerns. Ask to review your child's growth chart to discuss if your child is maintaining the expected growth rate. If there are concerns about your child's growth, your child's pediatric healthcare provider can order tests for many conditions that may affect growth. A referral to a pediatric endocrine team may be helpful since endocrine conditions such as a thyroid disorder also effect growth and weight. An example of a growth chart of a child with Cushing syndrome is included in this pamphlet. A pediatric endocrine specialist experienced with Cushing syndrome is important since some of the tests require adjustment based in the child's height/weight.