

Contact Us

For any enquiries regarding your child's growth or the investigations for growth hormone deficiency, please contact:

Assistant Nurse Clinician

Vanerry Tay

Paediatric Endocrine Nurse

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ktpnucmi_appt@nuhs.edu.sg

Other Instructions

About the Khoo Teck Puat – National University Children's Medical Institute (KTP-NUCMI)

The KTP-NUCMI is the paediatric arm of the National University Hospital and comprises the Departments of Paediatrics, Paediatric Surgery and Neonatology. We provide comprehensive and specialised medical and surgical services for newborns, children and adolescents. NUH is the only public hospital in Singapore that offers paediatric kidney and liver transplant programmes. Through a generous gift from the Estate of Khoo Teck Puat, we have set up an integrated outpatient facility with medical, diagnostic and rehabilitation services.

For more information about us, visit www.nuh.com.sg/ktp-nucmi.

Contact Us

24-hour Children's Emergency

Location: NUH Main Building, Zone F, Level 1
General Enquiry: +65 6772 5000

KTP-NUCMI

Location: NUH Main Building, Zone E, Level 2
(Accessible via Kent Ridge Wing, Zone C, Level 2, Lift Lobby C)
Operating Hours: 8.30am – 5.30pm (Mon to Fri), 8.30am – 12.30pm (Sat)
General Enquiry: +65 6772 5736 Appointment Line: +65 6908 2222
Email: ktpnucmi_appt@nuhs.edu.sg

9a Viva-University Children's Cancer Centre

Location: NUH Medical Centre, Zone B, Level 9
Operating Hours: 8am – 5.30pm (Mon to Fri)
Appointment Line: +65 6772 5030 Fax: +65 6872 4314
Email: cbccappt@nuhs.edu.sg

NUH Children's Urgent Care Clinic @ Bukit Panjang

Location: Junction 10, 1 Woodlands Road, #01-22, Singapore 677899
Operating Hours: 9am – 11pm daily (including public holidays)
General Enquiry: +65 6219 1538 Email: childrenucc@nuhs.edu.sg
Website: www.nuh.com.sg/ucc

NUH Child Development Unit @ JMC

Location: Jurong Medical Centre,
60 Jurong West Central 3, Level 2, Singapore 648346
Operating Hours: 8.30am – 5.30pm (Mon to Fri)
Appointment Line: +65 6665 2530/2531 Fax: +65 6665 0158
Email: cdu@nuhs.edu.sg Website: www.nuh.com.sg/cdu

NUH Child Development Unit @ Keat Hong

Location: Keat Hong Community Club,
2 Choa Chu Kang Loop, #03-01, Singapore 689687
Operating Hours: 8.30am – 5.30pm (Mon to Fri)
Appointment Line: +65 6769 4537/4637 Fax: +65 6665 0158
Email: cdu@nuhs.edu.sg Website: www.nuh.com.sg/cdu

National University Hospital

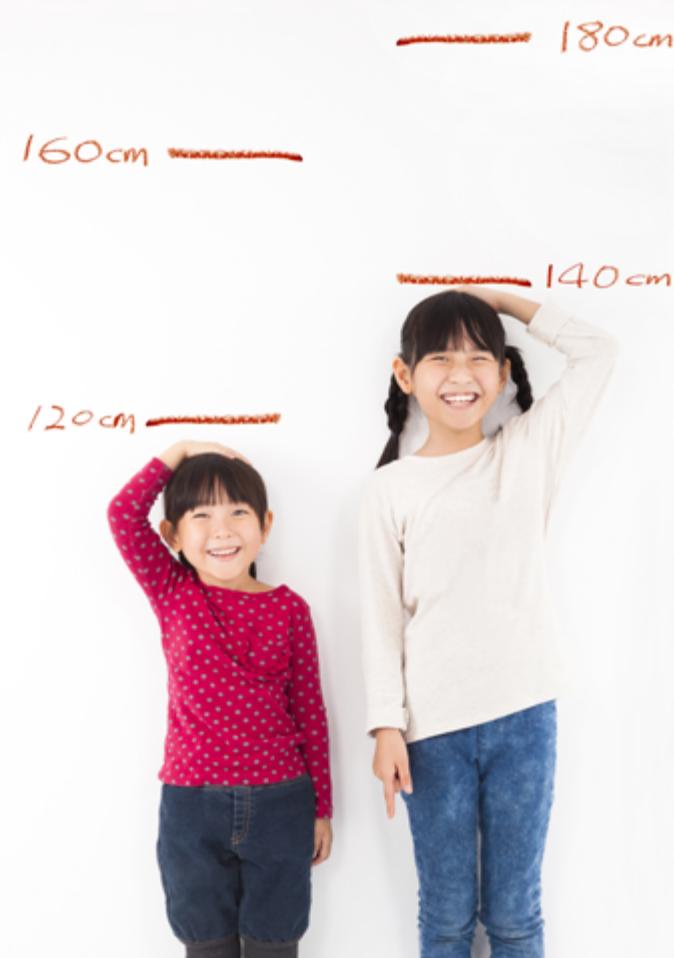
Location: 5 Lower Kent Ridge Road, Singapore 119074
Tel: +65 6908 2222 Email: contactus@nuhs.edu.sg
Website: www.nuh.com.sg



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NUH Campus Map

Information is correct at the time of printing (October 2022) and subject to revision without prior notice.

Investigations for Growth Hormone Deficiency



The information provided in this publication is meant purely for educational purposes and may not be used as a substitute for medical diagnosis or treatment. You should seek the advice of your doctor or a qualified healthcare provider before starting any treatment or if you have any questions related to your health, physical fitness or medical condition. Information is correct at the time of printing (Apr 2020) and subject to revision without prior notice.

What is growth?

Growth is an important characteristic of childhood. Normal growth during childhood depends on several factors including good general health, a well-balanced diet, active lifestyle, adequate sleep and genetics.

Children experience a growth spurt during their first two years of life and during puberty. The minimum growth rate in pre-pubertal children from 2 to 6 years of age is 5 to 6 cm per year and 4 cm per year for 6 to 12 years of age. While it is normal for children to be average or below average in size, there may be underlying medical conditions that can affect their growth. These include:

- Chromosomal abnormalities
- Endocrine disorders
- Cartilage or bone disorders
- Chronic diseases

What are the investigations to diagnose growth hormone deficiency?

For children who do not grow at least 5 cm per year (2 to 6 years) and 4 cm per year (6 to 12 years), or are falling off the growth percentile, the first screening test will be an exercise growth hormone stimulation test. If the results show that the level of growth hormone is low, the child will proceed to undergo a second test of growth hormone secretion with either a glucagon or the insulin stimulation test. The paediatrician will discuss these options with the caregivers.

How are these tests conducted?

Exercise Growth Hormone Stimulation Test

This is an outpatient test. Your child will need to fast overnight for 8 hours and turn up in sports attire as he or she will need to run on a treadmill.

An intravenous cannula will be inserted to draw blood from the plug every 10 minutes for 20 minutes. Your child needs to run on a treadmill for 10 minutes after insertion of the cannula. After the run, two other blood samples will be drawn from the plug 10 minutes apart.

	Running on treadmill R1 = (R + 10mins)		
	0 min	R1 + 10 mins (post running)	R1 + 20 mins (post running)
Growth Hormone	✓	✓	✓
Insulin Growth Like Factor	✓		

Glucagon Stimulation Test

Your child will be admitted to Paediatric Day Therapy for close monitoring. An intravenous cannula will be inserted to draw blood every 30 minutes for the next 180 minutes. An intramuscular injection of glucagon will be separately administered.

	IM Injection Glucagon					
	0 mins	60 mins	90 mins	120 mins	150 mins	180 mins
Glucose	✓	✓	✓	✓	✓	✓
Growth Hormone	✓	✓	✓	✓	✓	✓
Cortisol	✓	✓	✓	✓	✓	✓
Insulin Growth Like Factor	✓					

Insulin Stimulation Test

Your child will be admitted to Paediatric Day Therapy for close monitoring. An intravenous cannula will be inserted to draw blood every 15 minutes for 120 minutes after the administration of intravenous insulin.

	IV Insulin						
	0 mins	15 mins	30 mins	45 mins	60 mins	90 mins	120 mins
Glucose	✓	✓	✓	✓	✓	✓	✓
Growth Hormone	✓	✓	✓	✓	✓	✓	✓
Cortisol	✓	✓	✓	✓	✓	✓	✓
Insulin Growth Like Factor	✓						