Emergency Treatment for Children with Cortisol and GH Deficiencies and those Experiencing Recurrent Hypoglycaemia

Series N.5

Patient's Guide

Average Readability Leaflet

Emergency Information for Children with Cortisol and GH Deficiencies and those Experiencing Recurrent Hypoglycaemia - Series 5 (Revised August 2006)

This leaflet was produced by Fernando Vera MSc and Prof Gary Butler at the Institute of Health Sciences, University of Reading, Reading, UK (August, 2006). Some portions of the text were extracted or modified from the Growth and Growth Disorders Booklet Series (Third edition, 2000)* and may be used in conjunction with these as they provide a choice of leaflets providing the same information, but for people of different ages and reading abilities. The numbering sequence in each series is the same for easy cross-reference. The original leaflet series can be also obtained from the links given at the end.

All illustrations were created and produced by Fernando Vera MSc.

This leaflet is part of the Hormone Disorders Leaflet Series. The following are also available:

Series N 3.	Puberty and the Growth Hormone Deficient Child.
Series N 4.	Precocious Puberty
Series N 5.	Emergency Information for Children with Cortisol and GH Deficiencies and those Experiencing Recurrent Hypoglycaemia.
Series N 6.	Congenital Adrenal Hyperplasia
Series N 7.	Growth Hormone Deficiency in Young Adults.
Series N 10.	Constitutional delay of growth and puberty
Series N 11.	Multiple Pituitary Hormone Deficiency
Series N 12.	Diabetes Insipidus
Series N 13.	Craniopharyngioma
Series N 14.	Intrauterine Growth Retardation or Small Gestational Age
Series N 15.a.	Hyperthyroidism
Series N 15.b.	Hypothyroidism
Series N. 16.	Type 2 Diabetes and Obesity

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*Written by Dr Richard Stanhope (Gt. Ormond Street/Middlesex Hospital, London) and Mrs Vreli Fry (Child Growth Foundation

Introduction

This information leaflet has been produced for parents with children that may require hydrocortisone or glucagon treatment during accidents or severe illness. This may apply to children with the following conditions:

- Growth hormone deficiency (GHD)
- Multiple pituitary hormone deficiency (MPHD)
- Intrauterine growth retardation (IUGR)
- Congenital adrenal hyperplasia (CAH).

For children with GHD or IUGR, the problem is usually low blood sugar levels (hypoglycaemia). For children with MPHD or CAH, the problem usually relates to cortisol deficiency, often in combination with hypoglycaemia. Glucagon **should not** be used in children with UIGR/Russell Silver syndrome. In these children only hydrocortisone should be given.

What triggers hypoglycaemia?

Some of the following events may result in low blood sugar:

- Accident resulting in physical injury
- Infective illness, especially with a high temperature
- Vomiting
- Missed meals
- Prolonged energetic activity
- Severe emotional stress

What are the symptoms and treatment of hypoglycaemia?

Mild hypoglycaemia

Symptoms: dizziness, paleness, sweatiness, headaches or palipations.

Treatment: three glucose tablets or Lucozade. Sugar, sweets or sweet drinks are also suitable alternatives.

Moderate hypoglycaemia

Symptoms: paleness, “glassy-eyes”, confusion, sleepiness or aggression.

Treatment: Hydrocortisone and Glucagon injections should BOTH be given without delay. If injections are not available, a strong sugar drink should be given (e.g. half a glass of Lucozade or Glucose gel). If recovery does not occur, a doctor or ambulance must be called.

Severe hypoglycaemia

Symptoms**:** If the child is found in a coma and/or convulsing (fits), severe hypoglycaemia has occurred.

Treatment: Hydrocortisone and Glucagon injections should BOTH be given before transport to hospital. Alternatively, glucose solution may be given into the rectum (i.e. via the bottom). An ambulance must be called, as hospitalisation is extremely urgent.

What actions should be taken in emergency situations?

- **In ACCIDENTS resulting in unconsciousness:** Glucagon and Hydrocortisone should be injected as quickly as possible. An ambulance should be called for emergency admittance to hospital.

- **In ACCIDENTS not involving unconsciousness:** Glucagon and Hydrocortisone should be injected before he/she is sent to hospital. If the accident is not serious enough to need hospital treatment, treat as for illness.

- **In ILLNESS without vomiting:** First give three dextrose tablets or a sweet drink. If symptoms of hypoglycaemia develop, follow the steps under 'Symptoms and treatment of hypoglycaemia' on first page.

- **In ILLNESS with repeated vomiting:** If dextrose/sweet drink and hydrocortisone treatment can be kept down, give this treatment. If vomiting continues, the doctor should be contacted for advice and Glucagon and Hydrocortisone should be injected. Glucose may also be given into the rectum (back passage) if your child is fitting.

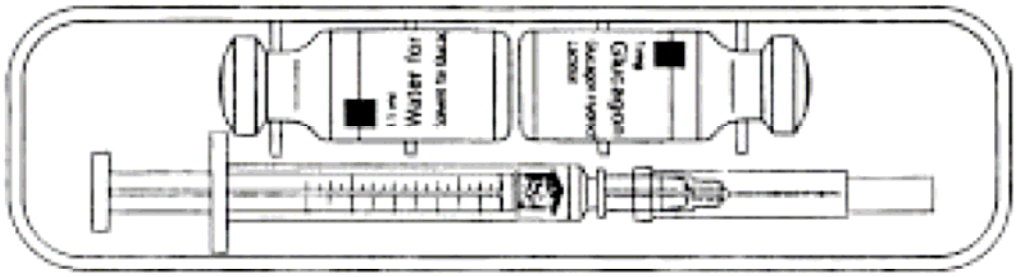
Remember: It is not harmful to inject Glucagon and Hydrocortisone in a doubtful situation.
Failure to inject when necessary could be very serious or even fatal.

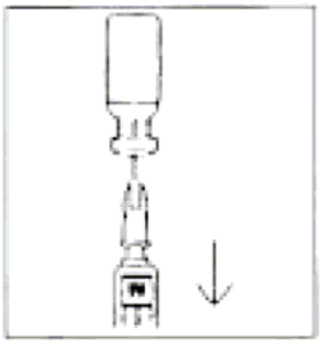
How is Glucagon and Hydrocortisone administered?

Glucagon (NOT for IUGR/RSS children)

- Inject glucagon **before** hydrocortisone if the child is hypoglycaemic. The dose is 0.5 mg subcutaneously for children aged less than 10 years. For children aged more than 10 years the dose is 1.0 mg. **Follow the instructions on the next page**

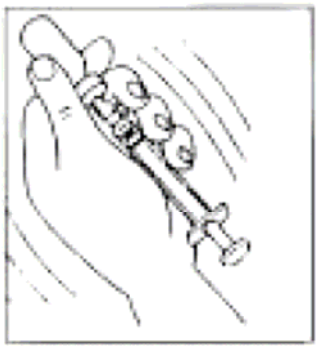
GLUCAGON (Hypoglycaemia Kit)





Use the disposable syringe provided to draw up the Water for Injections.

Inject the Water for Injections into the vial containing freeze-dried glucagon.



Without withdrawing the syringe, shake the vial until the contents are completely dissolved.

Draw up the solution into the syringe, check any air bubbles are removed, and inject it under the outer thigh or upper arm (subcutaneously). When the patient responds, administer oral carbohydrate (e.g. Dextrol, sweet biscuits or a sweet drink) to prevent a further 'hypo'.

Subcutaneous injection
Pinch the skin firmly between your thumb and forefinger. Hold the syringe like a pencil (either straight up or at an angle, whichever you prefer) and push the needle into the skin with a firm quick action.

Hydrocortisone

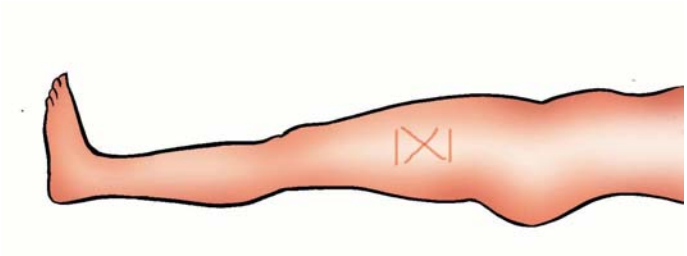
- Tablets: Use these if the child is under stress, weak or sick. Double or triple the usual morning dose and continue to give this dose three times a day until the child is well.

- Intramuscular Injection: Inject Hydrocortisone if the child is under stress or vomiting. The doses are as follows:

  - 25 mg for babies/infants
  - 50 mg for children aged 1-5 years
  - 100 mg for children aged more than 5 years.

Follow these 4 steps to give the intramuscular injection:

1. Divide the front part of the thigh into three parts between the hip bone and knee. Use the middle third on the side or front when the child is lying on its back



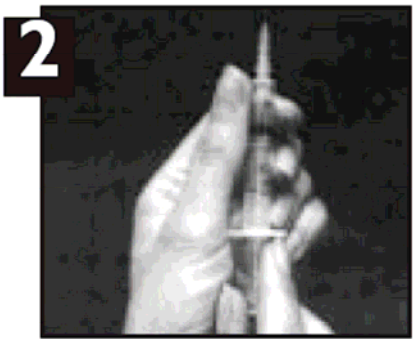
2. Stretch the skin tight using your thumb and forefinger.
3. Hold the syringe straight to make sure you inject into the muscle
4. Push the needle into the skin with a quick firm action.

How to prepare Hydrocortisone ?

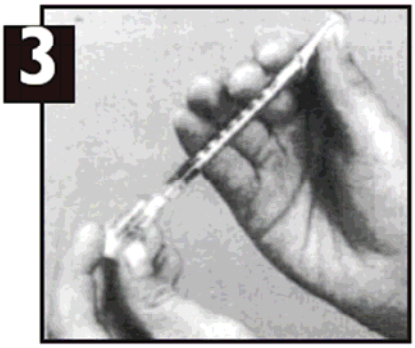
Follow the 6 steps as shown in the next page.

Hydrocortisone: preparation of substance

FIRMLY break the top of the ampoule of water.



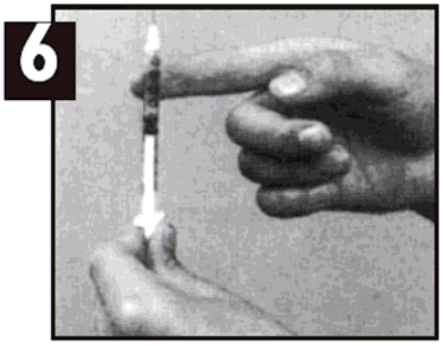
Attach needle to your syringe. Always keep the guard on the needle unless in use. If the needle touches any surface such as your hands or the table, it will no longer be sterile and should be changed for a new one.



Remove the guard and insert the needle into the water ampoule. Draw back the plunger to pull the water into the syringe. Discard the ampoule.

Push the needle through the rubber stopper of the hydrocortisone vial. Gently inject the water down the side of the bottle.

Make sure the solution has mixed then tip the vial upside down with the syringe still in place. Ensure that the needle end is below fluid level to avoid getting air in the syringe. Pull back the plunger and draw up the solution. Remove the syringe from the vial.



Tip the syringe to point the needle towards the ceiling and gently trap the side to dislodge any air bubbles to the top of the syringe, and then remove them by pushing the plunger until the air has passed through the neck of the syringe.

What are other sources of useful of information?

The goal of this leaflet was to provide a basic overview of the emergency treatment of hypoglycaemia in children with growth hormone deficiency (GHD). Further information, including this and other leaflets can be freely downloaded from the following websites:

- **European Society for Paediatric Endocrinology**
  ESPE Secretariat, BioScientifica
  Euro House 22 Apex Court Woodlands, Bristol BS32 4JT - UK
  Telephone No: + 44 (0) 01454 642208
  Internet: http://www.eurospe.org/
- **British Society for Paediatric Endocrinology and Diabetes**
  BSPED Secretariat, BioScientifica
  Euro House 22 Apex Court Woodlands, Bristol BS32 4JT - UK
  Telephone No: + 44 (0) 01454 642208
  Internet: http://www.bsped.org.uk/
- **Child Growth Foundation**
  2 Mayfield Avenue, Chiswick London W4 1PW UK.
  Telephone +44 (0) 20 8995 0257
  Internet: http://www.childgrowthfoundation.org/

You can also consult your doctor or nurse for additional information in your local area.