What are erythropoiesis stimulating agent (ESA) medicines?

Erythropoiesis stimulating agent (ESA) medicines are man-made versions of erythropoietin, which is a hormone (chemical messenger) produced naturally by the kidneys. The role of erythropoietin is to stimulate the bone marrow to produce more red blood cells. Red blood cells contain a substance called haemoglobin, which, as well as making blood red, carries oxygen around the body. If the body does not receive enough oxygen because too few red blood cells are circulating, this is called anaemia. There are various symptoms of anaemia including tiredness, weakness and lack of energy.

ESA medicines are usually prescribed when a child has chronic kidney disease (CKD). Anaemia is a common side effect of CKD because the kidneys cannot release enough erythropoietin. They may also be prescribed for low birth weight premature babies who have anaemia. Two types of ESA are used at GOSH: darbepoetin and epoetin beta.

How are they given?

Darbepoetin (under the brand name Aranesp®) is available as a clear, colourless liquid either in a pre-filled syringe or as a pre-filled auto injector device. Epoetin beta (under the brand name NeoRecormon®) only comes in pre-filled syringes. They can both be given either as an injection under
the skin (subcutaneously) or into a vein (intravenously).

The frequency of dose can be once a week, once every two weeks or less often. If your child is on haemodialysis then the intravenous route is used, otherwise the injection is subcutaneous. Parents or older children can be taught how to give darbepoetin or epoetin beta as injections under the skin. Please read our information sheet available from your doctor or nurse or on our website at www.gosh.nhs.uk/medical-conditions/medicines-information/giving-subcutaneous-injections.

The following disorders need to be considered carefully before starting an ESA

- Hypersensitivity to the medicines or any of their ingredients
- Existing untreated high blood pressure (hypertension)
- Seizures or convulsions
- Liver disease
- Pregnant, could be pregnant, trying to become pregnant or breastfeeding

What are the side effects of ESA medicines?

- Blood pressure may increase so needs regular checking
- Blood clots (thrombosis) may rarely occur if the haemoglobin rises too much
- Pain around the area injected
- Skin rash or redness
- Low iron levels, which may need to be treated with iron supplements

Very rarely, some people develop a severe allergic reaction to ESA medicines. Signs of a severe allergic reaction include skin rashes and itching, high temperature, shivering, redness of the face, a feeling of dizziness or a headache, as well as shortness of breath or chest pain. If you are in hospital and your child shows signs of a severe allergic reaction, call a doctor or nurse immediately. If you are at home and your child shows signs of a severe allergic reaction, call an ambulance immediately.

Pure red cell aplasia is a very rare side effect of ESA medicines, which causes the bone marrow to reduce or stop red blood cell production. If your child continues to experience symptoms of anaemia, including tiredness, weakness and lack of energy, please discuss this with your doctor immediately.

Interactions with other medicines

Always check with your doctor or pharmacist before giving your child any other medicines, including herbal or complementary medicines. No medicines are known to interact with ESA medicines.
General instructions

- Keep medicines in a safe place where children cannot reach them.
- Keep the pre-filled syringes in the fridge in their original container to protect the solution from light.
- Take a pre-filled syringe out of the fridge about 30 minutes before the injection to allow the solution to reach room temperature gradually. Do not try to heat it up in the microwave or hot water.
- Check the appearance of the solution and the expiry date on the syringe before giving the injection. If the solution looks cloudy or has bits floating in it or has passed its expiry date, do not use it but return to your pharmacist.
- If you are using one portion of a pre-filled syringe, dispose of it after use and use a fresh one for the next injection.
- Once you have given the injection, put the used syringe in the sharps bin. When the bin is full, return it to GOSH or your family doctor (GP) surgery for disposal.
- If you forget to give your child a dose, contact your doctor to discuss when the next dose should be given.
- If your doctor decides to stop treatment or the syringes pass their expiry date, return any unused ones to the pharmacist. Do not flush them down the toilet or throw them away.

Notes

Useful numbers

GOSH switchboard 020 7405 9200
Pharmacy medicines information: 020 7829 8608
(Monday to Friday from 9am to 5pm)

Compiled by the Pharmacy Department in collaboration with the Child and Family Information Group.

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