EPREX

CHECK YOUR FEARS AT THE DOOR-IT'S NOT AS SCARY AS YOU THINK!

Barbara Last

Registered Nurse

ONTraC Coordinator

Patient Blood Management Coordinator

Niagara Health

I have nothing to disclose.

ONTraC
Ontario Transfusion Coordinators

AGENDA

1. Pre Knowledge Questions
2. What is Erythropoeitin?
3. Mechanical Action of Erythropoeitin
4. What is ESA?
5. Who uses Eprex?
6. Current recommendations for Eprex
7. Dosing
8. Medical issues that affect the use of Eprex
9. Listed side Effects
10. Food for thought
11. Case Studies

PRE KNOWLEDGE QUESTIONS

What Should I Monitor While Giving Eprex?

a) CBC, serum iron profile with ferritin
b) Hematocrit, ferritin, TSAT
c) CBC, C-reactive protein, ferritin
d) Hemoglobin, ferritin, B12

Patients should not be prescribed Eprex if:

A. They are allergic to Eprex or any of its listed ingredients.
B. They have high blood pressure not controlled by blood pressure medication.
C. They have been diagnosed with Red Cell Aplasia.
D. They are undergoing chemotherapy.

Answer options

a) B and D
b) A, B, C
c) D
d) All of the above

Eprex can be given:

a) Intravenously and topically
b) Subcutaneously or orally
c) Intravenously or subcutaneously
d) Topically and intramuscular

What is Erythropoeitin?

It is a hormone secreted by the kidneys that increases the rate of the production of red blood cells in response to falling levels of oxygen in the tissues. Increased secretion happens if hypoxia is present which promotes survival and proliferation of the blood cells.

What is the mechanical action of Erythropoeitin?

Erythopoietin is a protein hormone essential to production of red blood cells (erythrocytes), which themselves deliver oxygen to all tissues in the body. This hormone is synthesized in the kidney and its secretion is regulated by the amount of oxygen delivered to that organ. When blood oxygen concentration is normal (normoxia), synthesis of erythropoietin occurs in scattered cells located predominantly in the inner cortex, but under conditions when blood oxygen is deficient (hypoxia), interstitial cells within almost all zones of the kidney begin to produce the hormone Erythropoietin is essential to the production of red blood cells because it is required for survival, proliferation, and differentiation of erythroid progenitor cells in the bone marrow.

What is ESA(Erythropoeitin Stimulating Agents)?

- Erythropoietin stimulating agents (ESAs) are recombinant versions of EPO produced pharmacologically via recombinant DNA technology in cell cultures.
- Examples of erythropoietin stimulating agents include epoetin alfa, darbepoetin, and methoxy polyethylene glycol-epoetin beta.
- Eprex and Aranesp are most commonly used in Canada.

Who Uses Eprex?

1. Adults receiving chemotherapy for solid tumours-i.e. malignant lymphoma or multiple myeloma.
2. Adults who are anemic pre-operatively for orthopedic surgeries to minimize the risk of needing a blood transfusion.
3. Adults who are being treated for bone marrow disorders such as myelodysplastic syndrome-Eprex can reduce the need for a blood transfusion.
4. Can be used in patients who are using autologous donation prior to major surgery-it stimulates red blood cell production so more blood can be retrieved.
5. Used to treat symptomatic anemia caused by kidney disease-can be used when not having renal replacement therapy, and with children and adults on hemo dialysis or peritoneal dialysis.
6. Adults who are undergoing HIV therapy.

Current Recommendation For ESA Use

- Patients undergoing major elective surgery with risk of significant blood loss hemoglobin drop 20 gL>10%
- Pre op hemoglobin **<130** for the majority of the population or **<120** for renal patients.
- In patients where blood transfusions are not an option, such as the Jehovah Witness population.

Dosing

Anemia From Chemo

- Based on body weight
- Starting dose is 150u/kg 3 x week or 40000u weekly

Anemia in the Renal Population

- Target Hgb is usually 105-110(due to risk of thrombosis)
- Based on body weight-determined by MD
- 50-100u/kg 3 x weekly

Pre-operatively

- Standard dosing is 600u/kg weekly starting 2-4 weeks pre-op

Paediatrics

- ESA not well studied-it is given and dosage is determined by the MD

Medical issues that may effect the use of Eprex

- Severe aluminum poisoning
- Severe bleeding disorders i.e.-thalassemia,
- Myelodysplatic syndrome
- Pure red cell aplasia(rare bone marrow disease)
- Folic acid or B12 deficiencies
- Porphyrin(red cell pigment) metabolism disorder
- Sickle cell anemia
- Active cancer(may cause tumors to progress)
- Congestive heart failure, MI or history of MI, heart bypass surgery, heart or blood vessel disease
- Severe coronary artery disease(left main disease>70%)
- History of seizures
- History of stroke
- Thrombosis risk
- Uncontrolled hypertension >180/90 mmHg

These patients are instructed to carefully follow a diet that is prescribed-they may need to eat foods higher in iron, folic acid, or B12.

THE SCARY SLIDE—SIDE EFECTS

- I was a hemodialysis nurse for 26 years prior to switching to my current role and in all those years I only had 1 patient who had a reaction to epo.
- Let your health care provider know if you have any of these side effects: chest pain, increased bp, fever, headache, swelling of face, fingers, ankles, feet or lower legs, weight gain.

Most Common

- Bone or joint pain, constipation, general feeling of tiredness or weakness, heartburn or belching, itching or stinging at injection site, loss of strength or energy, muscle aches and weakness, shivering, stomach upset, weight loss.

Less Common

There are 31 listed on the product monograph!!!

- Neurological or visual changes, pain, fatigue or weakness, anxiety, change in skin colour, dizziness, or light-headedness, double vision, fainting
- Tachycardia, migraine, nausea, pain or discomfort in the arms, jaw back or neck, groin, especially the calves, pale skin, partial or complete loss of speech
- seizure, sudden onset of a headache, skin rash or hives, slurred speech, sore throat, loss of coordination, sweating, temporary blindness, swelling or skin colour change at injection site, unusual bruising or bleeding, vomiting.

FOOD FOR THOUGHT

- ESA's do not cross the placenta.
- The excretion of exogenous epoetin alfa in breastmilk has not been studied. Women who have been given a dose of epo from a multi use vial that has benzyl alcohol in it are advised to avoid breast feeding for 2 weeks. Those that have single use vials don't have to head the same warning.
- Safe for use in pregnant women
  - we usually want them to reach a hemoglobin of 100-105.

Eprex in Cancer Patients

- Does decrease the need for blood transfusions but can increase mortality, decrease overall survival rate, increase the possibility of clots, and can increase tumour progression. Physician to determine if the benefits outweigh the risk in collaboration with their patient.

WHAT DID YOU LEARN?

What Should I Monitor When Giving Eprex?

a) CBC, serum iron profile with ferritin
b) Hematocrit, ferritin, TSAT
c) CBC, C-reactive protein, ferritin
d) Hemoglobin, ferritin, B12

Answer

- a) CBC, serum iron profile with ferritin

Patients Should Not Be Prescribed Eprex if:

A. They are allergic to Eprex or any of its listed ingredients.
B. They have high blood pressure not controlled with medication.
C. They have been diagnosed with Red Cell Aplasia.
D. They are undergoing chemotherapy.

Answer options

a) B and D
b) A, B, C
c) D
d) All of the above

Answer

- b) A, B, C.
- They are allergic to epo, they have uncontrolled high blood pressure not treated with medication and the have been diagnosed with red cell aplasia.

Eprex Can Be Given:

a) Intravenously and topically
b) Subcutaneously or orally
c) Intravenously or subcutaneously
d) Topically and intramuscular

Answer

- c) Intravenously or subcutaneously

CASE STUDIES

- 75 MALE
- HTN, high cholesterol
- No MI's , strokes or clots.
- 2020 during his work up for his hip replacement DX with IgG kappa paraproteinemia with a solirary lytic lesion of the scalp
- Monoclonal gammopathy/smoldering myeloma rather than full blown myeloma
- Accupril, Lipitor,ASA 81mg, vitamins and minerals

April 19/2023

Hgb 110

Ferritin 789

Retic 45

EPREX 40000iu x3

May 12/23 hgb 115

May 19/23 hgb 122

May 25/23 hgb 122

Pre op May 26/23 125

Post op May 28/23 110

October 10/23 hgb 110

Case Study 2

- 76 female
- OA, Type 2 diabetes, HTN
- No heart issues, strokes or clots
- Estradiol, metformin,sitagliptin, ferrous fumerate, perindopril, atorvastatin, HCTZ, Vit D3 and tylenol

- April 3/23 hgb 116 Sat 0.22%
- Started the ferrous fumerate at this time
- Eprex 40000iu x3
- April 28/23 hgb 116
- May 5/23 hgb 118

May 12/23 hgb 132-Eprex held

Pre-op May 16/23 129

Post op May 17/23 110

October 30/23 116-no longer taking the oral iron

Thank you for being a captive audience!