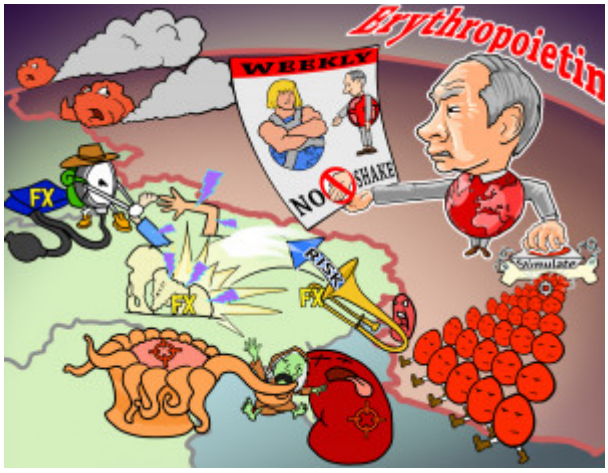
Erythropoietin

Erythropoietin (epoetin alfa, Epogen, Procrit) is a recombinant growth hormone that similar to human erythropoietin and stimulates the production of red blood cells in the bone marrow. This drug is indicated for patients with anemia secondary to health conditions such as chronic renal failure or chemotherapy-treated cancers. Administer the lowest dose of Erythropoietin necessary to gradually increase hemoglobin to the lowest level necessary to avoid the need for blood transfusions.



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Mechanism

Stimulates RBC Production

Stimulating rbc's

Erythropoietin is a synthetic growth hormone that stimulates the bone marrow to produce red blood cells. Increased RBC production also increases the patient's hemoglobin, hematocrit, and reticulocyte counts. Red blood cells transport oxygen to cells throughout the body. The patient requires adequate intake of iron, folic acid, and vitamin B12 in order to maximize the effectiveness of Erythropoietin.

Indications

Chronic Renal Failure

Crone with Dead-kidney

The kidneys are responsible for producing the naturally occurring hormone human erythropoietin. Patients with chronic renal failure have compromised kidneys and may develop anemia. Thus, erythropoietin is indicated for patients with chronic renal failure to maintain erythrocyte counts. Increased levels of hemoglobin lead to increased energy levels and may improve quality of life.

Anemia

Anemone

Erythropoietin is indicated for anemic patients to decrease or eliminate the need for blood transfusions. Anemia may be secondary to HIV medications, cancer, or chronic renal failure.

Side Effects

Increased Risk of Thrombosis

Up-arrow Risk Trombone

Erythropoietin increases the risk of thrombosis, stroke, and myocardial infarction. Minimize the risk of developing thrombosis by decreasing the dosage when hemoglobin levels near 12 gm/dL or when the hemoglobin levels increase more than 1gm/dL within 2 weeks.

Pelvic and Limb Pain

Pelvis and Limbs with Pain-bolt

Erythropoietin stimulates the bone marrow and may cause pelvic and limb pain. Inform the patient that the pain should subside within 12 hours. Administer a nonopioid analgesic (i.e. acetaminophen) if necessary.

Hypertension

Hiker-BP

Erythropoietin increases the production of red blood cells and results in increased levels of hemoglobin and hematocrit. Increased hematocrit leads to hypertension. It is important to monitor the patient's blood pressure and administer antihypertensive medications if necessary.

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Considerations

Do Not Shake

Won't Shake-hands

Do not shake the vial of Erythropoietin because it may denature the glycoproteins and inactivate the medication. Do not administer Erythropoietin in conjunction with other drug solutions.

Monitor Hemoglobin (Hgb) Weekly

He-man-globe in Weekly-paper

Erythropoietin increases levels of hemoglobin within 2 weeks and reaches target levels by 3 months. Hemoglobin levels should be measured twice weekly until target dose is reached and maintained. The patient's complete blood count, BUN, and iron levels should also be routinely monitored.

May Accelerate Tumor Progression

Fast Tumor-guy Progressing

Erythropoietin promotes angiogenesis (blood vessel formation) and may accelerate tumor progression. Patients with leukemia or other myeloid malignancies should not take Erythropoietin because it may lead to cancer proliferation. Erythropoietin is contraindicated in cancer patients not receiving either radiation or chemotherapy because of the medication's acceleration of tumor progression.

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