

Erythropoietin Stimulating Agents (ESA)

	Epoetin alfa (Epoen, Procrit, Retacrit)	Darbepoetin alfa (Aranesp)	Epoetin beta-methoxy polyethylene glycol (Mircera)
Indication for CKD Patient	Anemia associated with renal failure, reduce the incidence of blood transfusions		
Mechanism of Action	All are recombinant human erythropoietins, which stimulate erythropoietin receptors of erythroid progenitor cells in the bone marrow to increase hemoglobin levels		
Half Life	19 hours	49 hours	206 hours
Results	Improvement of hemoglobin levels can take 1-2 weeks , maximum acceptable levels can take 2-3 months to reach		Improvement of hemoglobin levels can take 2-6 weeks
Monitoring	<p>Patient must have adequate iron stores. If transferrin saturation is below 20% and ferritin concentration is below 100mg/dl, the patient will also need to be pretreated with iron supplements.</p> <p>Optimal hemoglobin level is 10-11gm/dl to reduce the risk of cardiovascular event.</p> <p>Hemoglobin and hematocrit should be assessed at baseline and twice weekly until target level is achieved and once a month thereafter. Iron should be monitored routinely.</p> <p>Closely monitor blood pressure.</p>		
Adverse Effects	<p>Increased incidence of myocardial infarction, stroke, or thromboembolism (risk is increased when hemoglobin levels increase rapidly)</p> <p>Hypertension, seizures, allergic reaction, skin reaction at injection site, GI upset, headache, body aches, weakness, dizziness, pure red cell aplasia (PRCA), increased tumor growth</p>		
Contraindications	Uncontrolled hypertension, pending cardiac or vascular surgery, cancer patients receiving hormonal agents, biologic products, or radiotherapy, pregnancy, pure red cell aplasia (PRCA)	<p>May not be used in anemic patients as a result of chemotherapy</p> <p>Uncontrolled hypertension, pending cardiac or vascular surgery, pure red cell aplasia (PRCA)</p>	

*Always follow physician orders when administering and monitoring ESAs.

*Please note that symptoms of fatigue may not improve with the use of these medications.

*ESA therapy does not replace the need for urgent correction of anemia or patients requiring surgery.

Sources:

<https://www.drugs.com/compare/epoetin-alfa-vs-darbepoetin-alfa-vs-mircera>
<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=1f2d0b28-9cc5-4523-80b8-637daf3f7a5#section-10.1>

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