Drug Class Review Monograph — GPI Class 82 — Hematopoietic Agents

Review Time Frame: February 2016 - January 2017

Previous Class Review: N/A

Background:
Hematopoietic agents are involved in the formation of blood cells. There are various drug classes that make up this unique class of medication, many of which are discussed below:

- Hematopoietic growth factors are a family of glycoproteins that help to boost marrow function. Erythropoietin, granulocyte colony-stimulating factor, and granulocyte/macrophage colony-stimulating factor are some of the common hematopoietic growth factors. Erythropoietin regulates the production of red blood cells by stimulating the division and differentiation of committed erythroid progenitor cells in the bone marrow. Granulocyte colony-stimulating factors are involved in the regulation and production of neutrophils to increase their migration and cytotoxicity. Granulocyte/Macrophage colony-stimulating factors support the survival, clonal expansion, and differentiation of progenitors in the granulocyte-macrophage pathways as well as megakaryocytic and erythroid progenitor cells. Stem cell factors interact with hematopoietic progenitor cells.

- Cyanocobalamin is a coenzyme for various metabolic functions, including fat and carbohydrate metabolism and protein synthesis, used in cell replication and hematopoiesis.

- Folic acid is the precursor for tetrahydrofolic acid and methyltetrahydrofolate which are essential for the maintenance of normal erythropoiesis.

- Iron allows the transportation of oxygen via hemoglobin, provides the necessary iron in hemoglobin and other enzymes. Normal erythropoiesis is dependent on the concentration of iron and erythropoietin available in the plasma.

- Hydroxyurea increases red blood cell (RBC) hemoglobin F levels, RBC water content, and deformability of sickled cells, and as well as alters adhesion of RBCs to endothelium.

New Treatment guideline recommendations pertaining to hematopoietic agents:

- None identified

- The American Society of Clinical Oncology Clinical Practice Guideline update recommends the addition of tbo-filgrastim and filgrastim-sndz, moderation of the recommendation regarding routine use of hematopoietic colony-stimulating factors (CSFs) in older patients with diffuse aggressive lymphoma and in favor of high-dose intensity chemotherapy in urothelial cancer.

Newly approved drugs:

- None identified

- March 06, 2015 Zarxio (filgrastim-sndz) solution for injection
Newly approved formulations:
• None identified

Newly approved generics:
• None identified

Discontinued drugs:
• None identified

FDA Safety Alert/black box warnings:
• None identified

Pipeline alerts:
Agents pending FDA approval include:

*generic availability SC-subcutaneously