

# Bullet Point Nursing

## Hematology / Oncology Pharmacology

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### Hematology notes:

- A state of reduced red blood cells (RBCs), hemoglobin, or hematocrit
  - Iron deficiency anemia
  - B12 deficiency anemia
  - Folate deficiency anemia
  - Hemolytic anemia
- Labs include CBC, iron panel (iron, ferritin, TIBC)
- S/S: Fatigue, pallor, weakness, shortness of breath, dizziness, tachycardia

### Drug name: Epoetin alfa (Epogen)

- MOA: Stimulates erythropoiesis (RBC production) by acting as a synthetic erythropoietin
- Indications: Anemia (due to CKD, chemo)
- Black Box warning: Multiple adverse events when given to patients with hemoglobin over 11, Tumor progression or recurrence in certain cancers
- SE/AE: Hypertension, arthralgia, n/v, fever
- Requires several days to weeks to achieve therapeutic effects
- Administered parenterally

### Drug name: Filgrastim

- MOA: Stimulates the production of neutrophils
- Indications: Increase neutrophils, decrease risk of infections in patients undergoing chemo
- SE/AE: Bone pain
- Administered parenterally
- Requires several days to assess results

### Drug name: Ferrous sulfate (Iron)

- MOA Elemental iron, required component for hemoglobin synthesis
- Indications: Iron deficiency anemia (treatment and prevention)
- SE/AE: Nausea, constipation, dark stool
- Can cause fatal overdose in children
- Taking PO iron with food decreases absorption and side effects
- PO treatment continues for 1-2 months, until hemoglobin is corrected
- Patient education:
  - Dietary sources of iron include meats, grains, fruits, vegetables, fortified cereals
  - Vitamin C increases the absorption of iron
  - A normal effect is that the stool will turn black

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## **Drug name: Cyanocobalamin (Vitamin B12)**

- MOA: Required component for red blood cell creation and DNA synthesis
- Indications: Megaloblastic anemia
- Available PO, IM, SC, IN
  - Acute presentations are treated with IM injections
- Treatment may need to continue for life
- Patient education: Dietary sources are only available from animal products such as eggs, dairy, and meat

## **Chemotherapy notes:**

- Definition: Chemotherapeutics are medications used to treat cancer, often targeting rapidly dividing cells
- Many chemotherapy drugs require the use of specialized protective equipment, such as nitrile gloves, to prevent dermal exposure
  - Radioactive isotopes require handling and disposal precautions (i.e. shielding, etc)
- Chemotherapy is often used in combination with options such as radiation and surgery
- Chemotherapeutics adverse effects:
  - Teratogenicity – Ensure patients are not pregnant or planning to become pregnant
  - Nausea / vomiting – Premedicate patients with antiemetics prior to treatment
  - Immunosuppression – Ensure patients are educated on disease prevention
  - Alopecia – Educate patients that this is reversible after treatment

## **Drug class: Alkylating agents**

- Drug:
  - Cyclophosphamide
- MOA: Interferes with DNA replication
- Indications: Cancer

## **Drug class: Antimetabolite – Folic acid antagonist**

- Drug:
  - Methotrexate
- MOA: Blocks folate acid thereby inhibiting DNA synthesis
- Indication: Tumors, autoimmune disease (Psoriasis, SLE, RA, etc.), induction of abortion
- Onset of action is several weeks for RA
- Often used as first line for RA after NSAIDs
- Teratogenic
- SE/AE: Can cause adverse effects across many systems

## **Drug class: Antimetabolite – Pyrimidine antagonist**

- Drug:
  - Fluorouracil (5-FU)
- MOA: Interfering with thymidine synthesis interferes with RNA synthesis

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- Indications: Cancer

## **Drug class: Antitumor antibiotics (Cytotoxic)**

- Drug:
  - Doxorubicin
- MOA: Inhibits synthesis of DNA and RNA
- Indications: Cancer
- SE/AE: Cardiotoxicity
- Patient education: Can change bodily fluids to a reddish color

## **Drug class: Plant alkaloid (Antimitotic)**

- Drug:
  - Vincristine
- MOA: Inhibits cell division and RNA/DNA/protein synthesis
- Indications: Cancer
- SE/AE: Neuropathy and other CNS s/s

## **Drug class: Topoisomerase I Inhibitor**

- Drug:
  - Topotecan
- MOA: Prevents DNA repair by stabilizing single-strand breaks leading to DNA damage
- Indications: Cancer
- SE/AE: Bone marrow suppression

## **Drug class: Antiestrogen**

- Drug:
  - Tamoxifen
- MOA: Block estrogen receptors in breast tissue (acts as a SERM)
- Indication: Treatment and prevention of breast cancer
- Black Box warning: Endometrial cancer, thromboembolic events
- SE/AE: Hot flashes, decreased libido and related effects

## **Drug class: Calcineurin inhibitor**

- Drug:
  - Cyclosporin
- MOA: Suppresses the immune system
- Indication: immunosuppression to prevent organ rejection post-transplant, autoimmune disease
- SE/AE: HTN, infection, nephrotoxic, hepatotoxicity, malignancy, and more
- Many different black box warnings

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## References

Adams, M., Holland, N. & Chang, S. (2023). *Pharmacology for nurses; a pathophysiologic approach*.  
Pearson

Burchum, J., & Rosenthal, L. (2022). *Lehne's pharmacology for nursing care*. Elsevier

Mccuiston, L., Vuljoin-DiMaggio, K., Winton, M., & Yeager, J. (2023) *Pharmacology: A patient centered nursing process approach*. Elsevier