PHARM.D • YEAR 4

Clinical Pharmacy

CHAPTER 4

Clinical Laboratory Tests and Interpretation of Test Results

PPT CHAPTER COVER

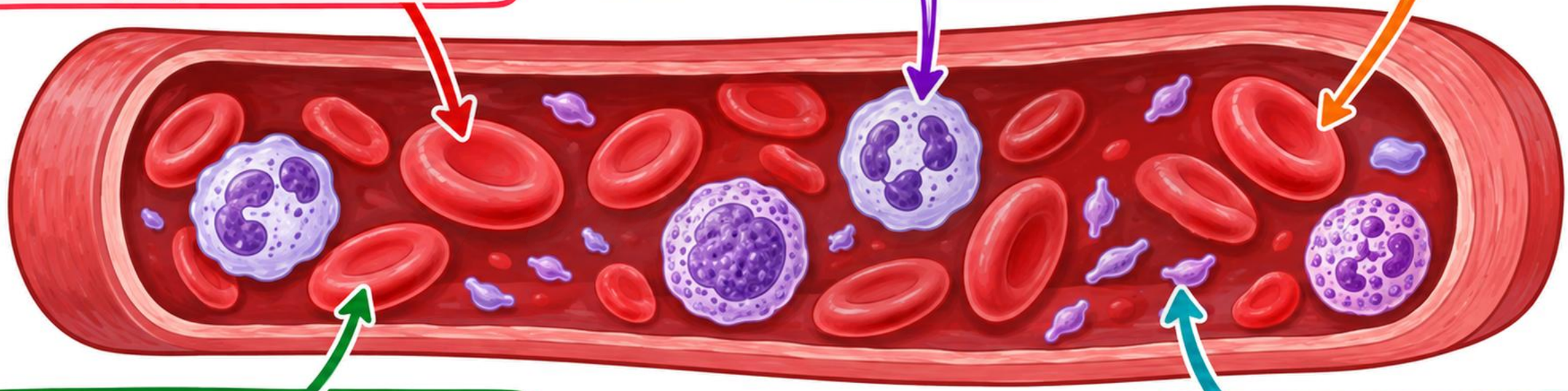


COMPLETE BLOOD COUNT: OVERVIEW

Hemoglobin and hematocrit: oxygen-carrying capacity and red-cell proportion.

WBC count: immune and inflammatory cells.

RBC count: number of red blood cells.



MCV: classifies red cells as microcytic, normocytic or macrocytic.

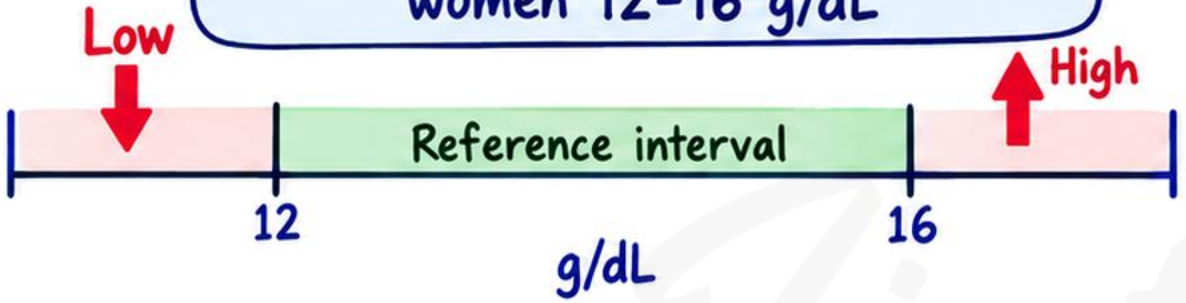
Platelet count: primary hemostasis and bleeding risk.

Interpret the pattern, patient context and trend, not one value alone.

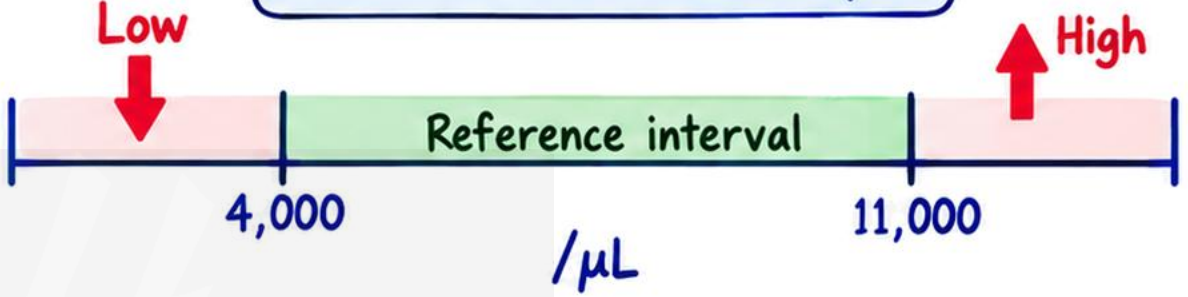
CBC: TYPICAL ADULT INTERVALS

Typical intervals - verify the reporting laboratory:

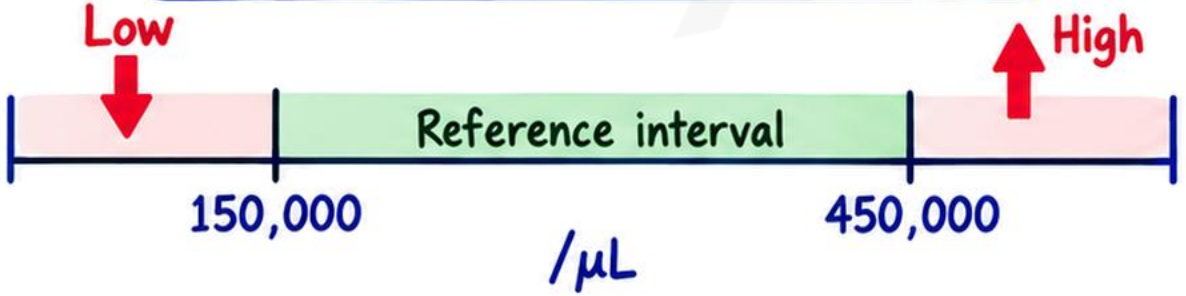
Hemoglobin: men 13.5-17.5 g/dL; women 12-16 g/dL



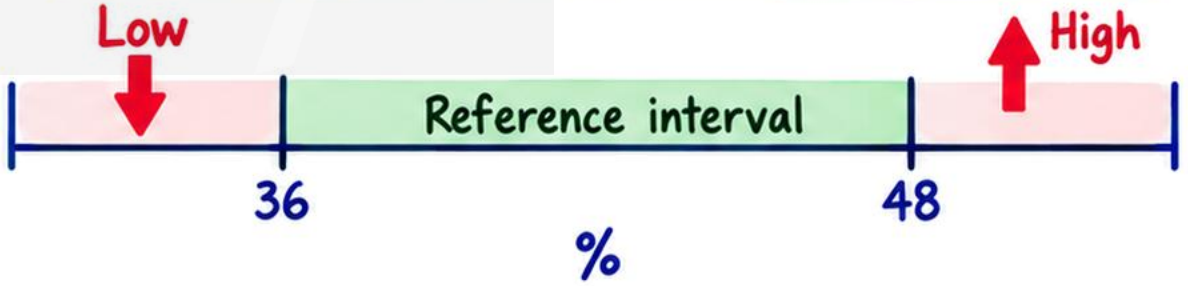
WBC: 4,000-11,000/µL



Platelets: 150,000-450,000/µL



Hematocrit: men 40-54%; women 36-48%



- Low hemoglobin suggests anemia.
- Low platelets increase bleeding risk.
- High or low WBC counts require clinical interpretation.

HEMATOLOGY: PHARMACY LINKS

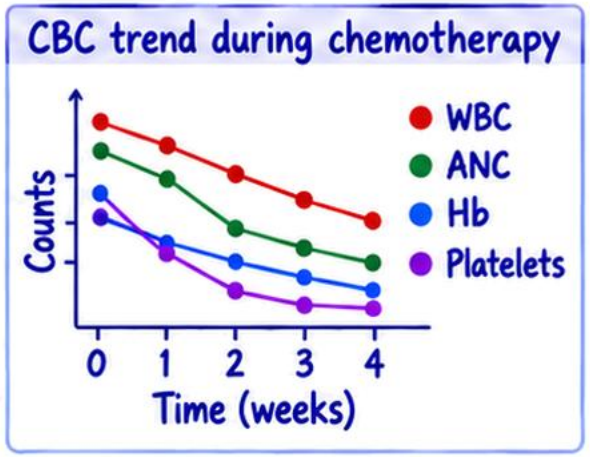
Clinical pharmacists use hematology tests to:

- detect myelosuppression during chemotherapy
- recognize medicine-related anemia
- monitor thrombocytopenia and bleeding risk
- assess infection risk with low neutrophils
- connect abnormal counts with dose, duration and timing

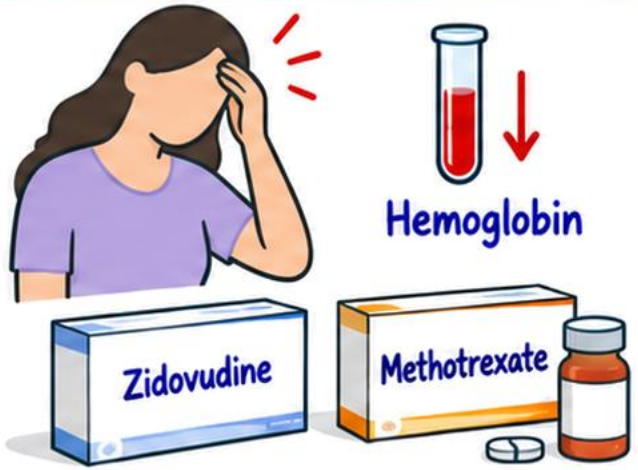
Examples in the source include zidovudine or methotrexate-associated anemia and heparin-associated thrombocytopenia.
Escalate severe or rapidly changing abnormalities.

Chemotherapy: monitor for myelosuppression

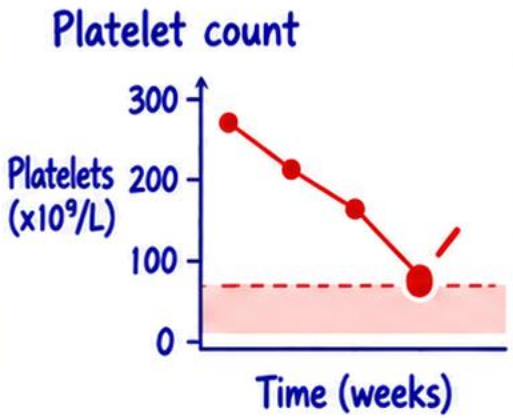




Falling hemoglobin: consider medicine-related anemia



Thrombocytopenia: monitor and assess bleeding risk



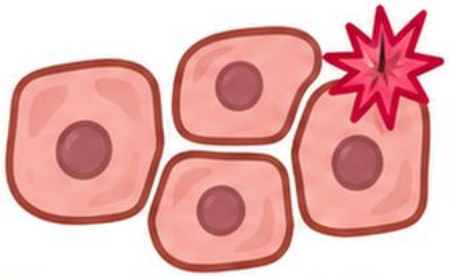


LIVER TESTS: INJURY PATTERNS

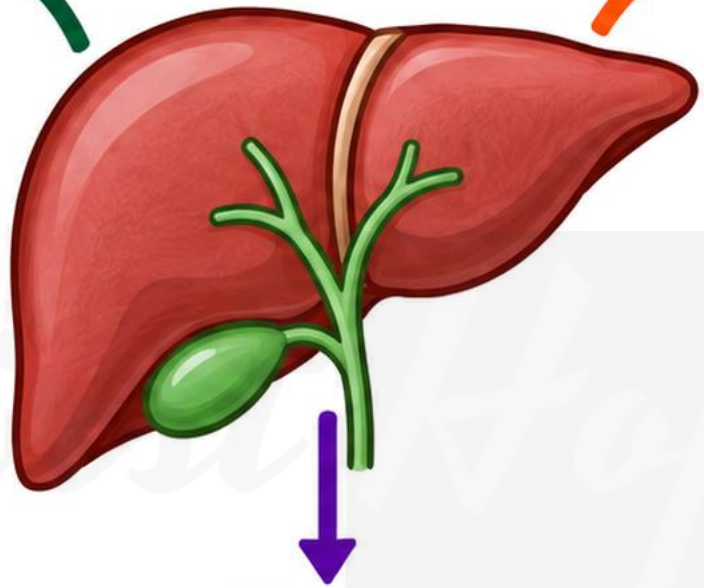
Hepatocellular pattern

ALT and AST rise with hepatocellular injury; ALT is more liver-specific.

↑ ALT ↑ AST



Hepatocyte injury



Bilirubin

Bilirubin may rise with impaired processing, hemolysis or bile obstruction.



Jaundice

Cholestatic pattern

ALP rises in cholestasis but may also come from bone. GGT can support a hepatic source for elevated ALP.

↑ ALP ↑ GGT



Bone source



Hepatic source

Interpret the relative pattern, magnitude, symptoms and medicine timeline.

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