

Anemia

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Goal

TO PROVIDE A PRACTICAL, EFFICIENT, COST
EFFECTIVE STRATEGY FOR EVALUATION OF
ANEMIA

Mechanisms of Anemia

There are only three:
1 Decreased Effective Production
2 Hemolysis
3 Bleeding

Divide Anemia Into Three Main Classes Based on MCV

Microcytic
Normocytic
Macrocytic

Laboratory Tools Used to Help

--Define the mechanism of anemia
--Further categorize anemia
beyond microcytic, macrocytic and
normocytic

Consider Three Basic Questions

Question # 1
What is the MCV?

Question #2

- What is the Basic Mechanism
- 1 Decreased effective production
 - 2 Bleeding
 - 3 Hemolysis
- Reticulocyte count helpful

Question #3

Does the patient have another condition commonly associated with anemia?

Also consider race and sex

The initial data should enable the HCP to classify the anemia based on the MCV and categorize the mechanism

Lab Tests/Tools used to define Anemia

CBC, MCV, Ferritin
Serum Iron, Total Iron Binding Capacity (TIBC), % Saturation, Haptoglobin, Peripheral Smear,
Bone Marrow Biopsy (gold standard to measure Iron stores)

Reticulocyte Count/Index

$\text{Reticulocyte Count} \times \frac{\text{Pt. Hct}}{45} \text{ (nl. Hct)}$

$$6 \times 15/45 = 2\%$$

Low MCV Anemias (less than 80)

Iron Deficiency
Thalassemia's

Anemia of Chronic Disease
Occasionally

Sideroblastic Anemia
Rare

Aluminum Toxicity

High MCV Anemias
(above 100)
Megaloblastic Anemias
B12 Deficiency
Folate Deficiency
Drugs

Myelodysplastic Syndromes

Liver Disease

Alcoholism

Reticulocytosis

Spurious – Rouleaux Formation

Anemias with Normal MCV
and appropriate Reticulocyte Index

Bleeding
Hemolysis – Intravascular
Extravascular (most common)

Anemias with Normal MCV
and inappropriately low Reticulocyte
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Among the Most Common in Practice
Make Sure Mild Anemia Reproducible
on CBC

Large Volume Shifts

Acute Bleeding

Renal Failure (decreased Erythropoetin)

Anemia of Chronic Disease

Cancers
Rheumatoid Arthritis

Bone Marrow Disorders/Infiltration

Bone Marrow Suppression
Drug Induced

Early Iron Deficiency Anemia

Combined Iron Deficiency and Megaloblastic Anemia

