Anemia Assessment and Management

Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson’s specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient’s care. This algorithm should not be used to treat pregnant women.

**PRESENTATION**

Anemia

- Acute bleed - unanticipated
- Acute bleed - tumor related
- Acute bleed - anticipated (intraoperative)
- Related to cancer without any treatment

See Page 2 for chemotherapy and/or radiation, as well as other or unknown causes

TIBC = total iron binding capacity
MCV = mean corpuscular volume

**ASSESSMENT**

- Hemoglobin less than or equal to 7 grams/dL
- Hemoglobin between 7 and 9 grams/dL
- Hemoglobin greater than or equal to 9 but less than 10 grams/dL

**TREATMENT**

- Transfuse patient to eliminate symptoms
- Take into account any hemoglobinopathy
- Laboratory tests to evaluate for nutritional deficiencies or hemolysis if indicated:
  - MCV less than 80 - serum iron, transferrin with TIBC, ferritin
  - MCV greater than 100 - serum vitamin B₁₂, folate and homocysteine levels

- Monitor as clinically indicated
- Laboratory tests to evaluate iron, vitamin B₁₂ and folate nutritional deficiencies (replacement recommendations as indicated):
  - MCV less than 80 - serum iron, transferrin with TIBC, ferritin
  - MCV greater than 100 - serum vitamin B₁₂, folate and homocysteine levels

Yes

Is patient symptomatic?

No

Continue monitoring
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### PRESENTATION

- **Anemia**
  - Related to chemotherapy and/or radiation
  - Hemoglobin less than or equal to 7 grams/dL
  - Hemoglobin between 7 and 9 grams/dL
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  - Other or unknown cause

### TREATMENT

- **Transfuse patient to eliminate symptoms**
- **Take into account any hemoglobinopathy**
- **Laboratory tests to evaluate for nutritional deficiencies or hemolysis if indicated**:
  - MCV less than 80 - serum iron, transferrin with TIBC, ferritin
  - MCV greater than 100 - serum vitamin B₁₂, folate and homocysteine levels

- **The use of ESA are contraindicated**
  - Continue laboratory monitoring
  - Use institutional ESA ordering tools (darbepoetin alfa, epoetin alfa)

- **Monitor as clinically indicated**
  - Laboratory tests to evaluate for nutritional deficiencies or hemolysis if indicated:
    - MCV less than 80 - serum iron, transferrin with TIBC, ferritin
    - MCV greater than 100 - serum vitamin B₁₂, folate and homocysteine levels

- **Follow care path “A” (on Page 1)** depending on hemoglobin level

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**Related to chemotherapy and/or radiation**

- **Yes**
  - Curative myelosuppressive chemotherapy?
  - Radiation treatment alone?

- **No**
  - Is patient symptomatic?
  - Monitor as clinically indicated
  - Laboratory tests to evaluate for nutritional deficiencies or hemolysis if indicated:
    - MCV less than 80 - serum iron, transferrin with TIBC, ferritin
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**Recommended evaluation:**
- Stool guaiac – obtain Gastroenterology consult if positive
- Nutritional deficiencies – consider Nutrition consult
- Hemolysis, premalignancy, or other suspected etiologies – obtain Hematology consult

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**ESA** = erythropoietin stimulating agents

1. ESAs may be considered for patients who refuse blood transfusions after discussing the risks
2. See FDA approved indications and CMS guidelines

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SUGGESTED READINGS


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DEVELOPMENT CREDITS

This practice consensus statement is based on majority opinion of the Anemia experts at the University of Texas MD Anderson Cancer Center for the patient population. These experts included:

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