

Preoperative anemia in major elective surgery

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1 The prevalence of preoperative anemia is high

An estimated 23%–45% of patients undergoing major surgery have anemia, with the most common causes being iron deficiency anemia and anemia of inflammation or chronic disease.^{1,2}

2 Preoperative anemia leads to adverse outcomes

Regardless of its severity, preoperative anemia is an independent risk factor for postoperative death, major morbidity, increased length of hospital stay and transfusion.^{1,3} In patients undergoing cardiac surgery, a 10 g/L decrease in preoperative hemoglobin levels increased mortality odds by 16% (95% confidence interval 10%–22%).²

3 A preoperative hemoglobin of 130 g/L or higher should be targeted for both sexes

Females have lower circulating blood volumes and greater proportional operative blood loss than males.⁴ Females with a hemoglobin of 120 g/L were shown to be twice as likely as males with a hemoglobin of 130 g/L to receive postoperative blood transfusions.⁴ When treating preoperative anemia, targeting the same hemoglobin level in both sexes minimizes the risk of unfavourable outcomes and transfusions.⁴

4 Patients undergoing major elective surgery, with expected blood loss of more than 500 mL, should be screened for anemia 6–8 weeks before their operation

Clinicians should order a complete blood count and ferritin levels, as iron deficiency anemia (ferritin < 30 ng/mL) is the most common cause.^{1,4} When underlying inflammation is present, ferritin is less sensitive, and iron deficiency anemia can be diagnosed with a ferritin of 30–100 ng/mL and a transferrin saturation of less than 20%.^{1,4} Patients with iron deficiency anemia should be investigated for an underlying cause (e.g., gastrointestinal blood loss, menorrhagia, malabsorption).

5 Preoperative iron deficiency anemia should be treated with iron supplementation

Patients with iron deficiency anemia at least 8 weeks from surgery should be treated with oral supplementation at equivalent doses of 40–60 mg elemental iron daily or 80–100 mg every other day.^{1,4} If patients are within 8 weeks of surgery, or if they are unable to tolerate oral supplementation, they should receive intravenous iron.¹ For patients with refractory or other forms of anemia, erythropoiesis-stimulating agents can be considered along with a specialist referral.^{1,5}

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