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30 November to 2 December 2024

Sheraton Grand Doha Resort & Convention Hotel,
Doha, Qatar

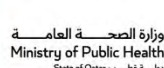
INTRODUCTION TO PATIENT BLOOD MANAGEMENT PREOPERATIVE ANAEMIA MANAGEMENT

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OUTLINES

Introduction

WHO Policy brief

Preoperative Anaemia clinic

Local Project

Summery& Conclusion

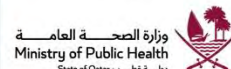
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Introduction

PATIENT BLOOD MANAGEMENT



Patient-centered, evidence-based, multidisciplinary approach to optimizing the care of patients who may need transfusion.



Its Aim is to Improves the patient's own blood and avoids unnecessary transfusions.

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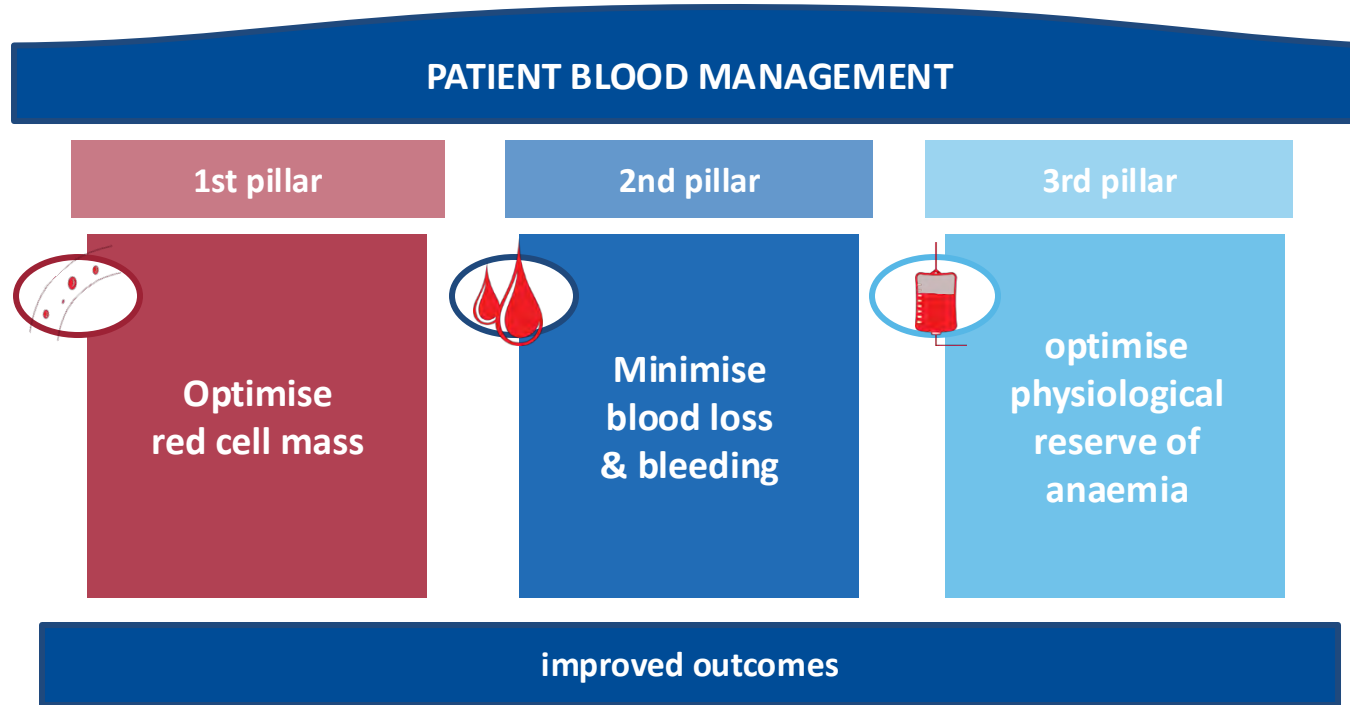


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PATIENT BLOOD MANAGEMENT IMPROVES PATIENT OUTCOME



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POLICY BRIEF

THE URGENT NEED TO IMPLEMENT PATIENT BLOOD MANAGEMENT

1. Introduction

In the past four decades, increased awareness of the inherent risks of transfusion has resulted in major initiatives to mitigate those risks through improvements in blood component safety. The realization that the intense focus on product safety had not been matched with a similar focus on improving transfusion decisions at the bedside led to the concept of "optimal blood use". The practice of transfusion medicine now emphasizes the judicious use of transfusion, only when clinically indicated. The concept that "our own blood is still the best thing to have in our veins" (1) has given rise to various

2. Purpose of this policy brief

This policy brief aims to:

- **create awareness** about the enormous, but greatly under-appreciated global disease burden of **iron deficiency, anaemia, blood loss and bleeding disorders**;
- **create a sense of urgency** for health care entities to implement **PBM**, a systematic, multidisciplinary, multiprofessional concept to routinely minimize these risk factors, and, in so doing, **significantly and cost-effectively improve health and clinical outcomes for hundreds of millions of medical and**

World Health Organization. (2021). The urgent need to implement patient blood management: policy brief. World Health Organization.

<https://apps.who.int/iris/handle/10665/346655>. License: CC BY-NC-SA 3.0 IGO

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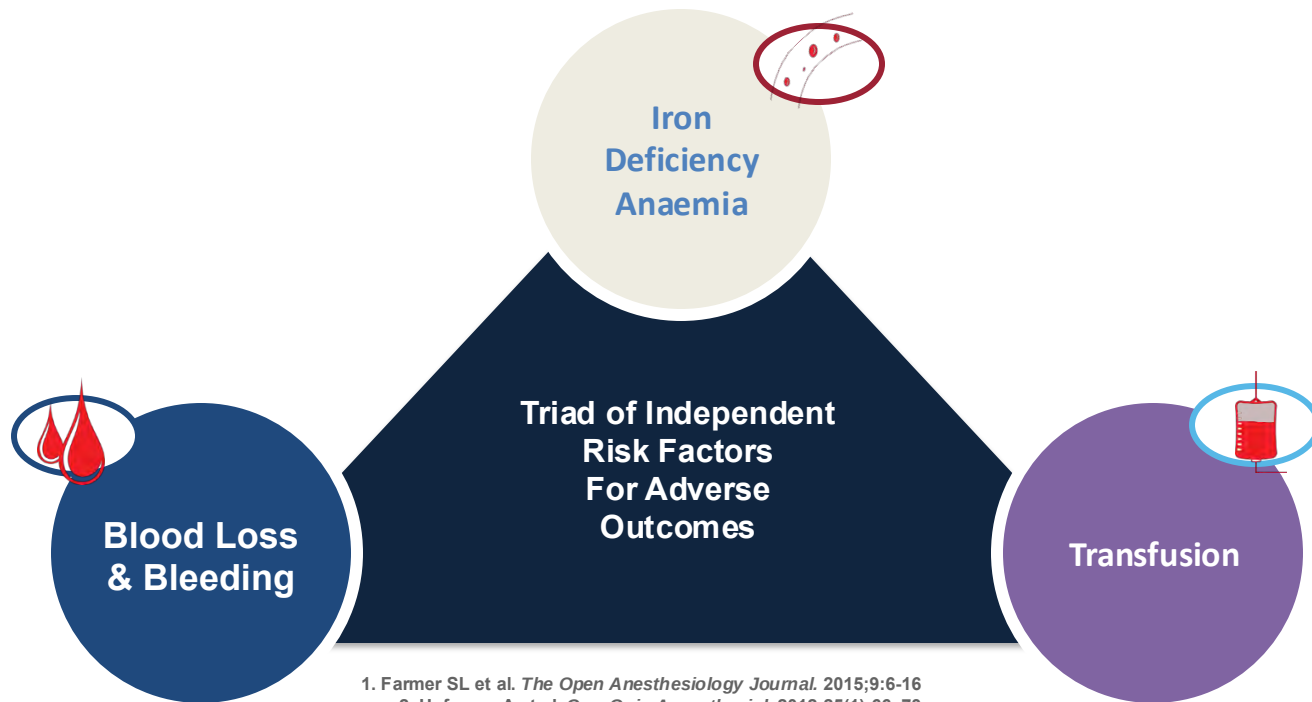


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INDEPENDENT RISK FACTORS FOR ADVERSE OUTCOMES^{1,2}



1. Farmer SL et al. *The Open Anesthesiology Journal*. 2015;9:6-16
2. Hofmann A et al. *Curr Opin Anaesthesiol*. 2012;25(1):66-73

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مؤسسة حمد الطبية
Hamad Medical Corporation

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ANEMIA

- **Anaemia in the general population** affects an estimated 1.95 to 2.36 billion individuals worldwide
- Iron deficiency anaemia (IDA) alone affects an estimated 1.24 to 1.46 billion people
- The total number of surgical procedures each year is estimated at 313 million
- About 80–90% of patients are anaemic following surgery

Anaemia is most prevalent in:

neonates and children,

women of reproductive age especially during pregnancy,

elderly people



What is anaemia?

Lower than normal

Number of circulating RBCs¹

Hb levels

- According to the WHO, Hb levels < 12 g/dL in women or < 13 g/dL in men are indicative of anaemia^{1,2}

Haematocrit

- Percentage volume of packed RBCs in a blood specimen¹

- 1. Smith RE. Am J Manag Care. 2010;16:S59–66; 2. Cappellini MD, et al. Semin Hematol. 2015;52:261–9.

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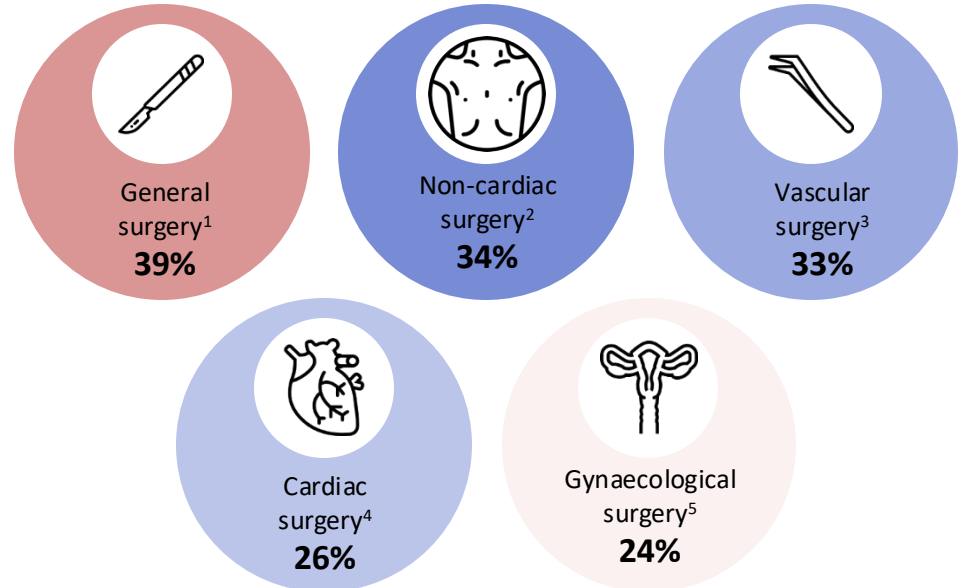
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ANEMIA IS COMMON IN PATIENTS UNDERGOING SURGERY1-5



1. Fowler AJ et al. *Br J Surg.* 2015;102(11):1314–1324
2. Muñoz M et al. *Anaesthesia.* 2017;72:233–247
3. Dunkelgrun M et al. *Am J Cardiol.* 2008;101(8):1196–1200
4. Karkouti K et al. *Circulation.* 2008;117(4):478–484
5. Richards T et al. *PLoS One.* 2015;10(7):e0130861

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PREOPERATIVE ANAEMIA HAS A NEGATIVE IMPACT ON PATIENT OUTCOMES^{1,2}

Preoperative anaemia is associated with



CI = confidence interval; OR =
odds ratio

1. Fowler AJ et al. *Br J Surg*. 2015;102(11):1314–1324
2. Beattie WS et al. *Anesthesiology*. 2009;110:574–581

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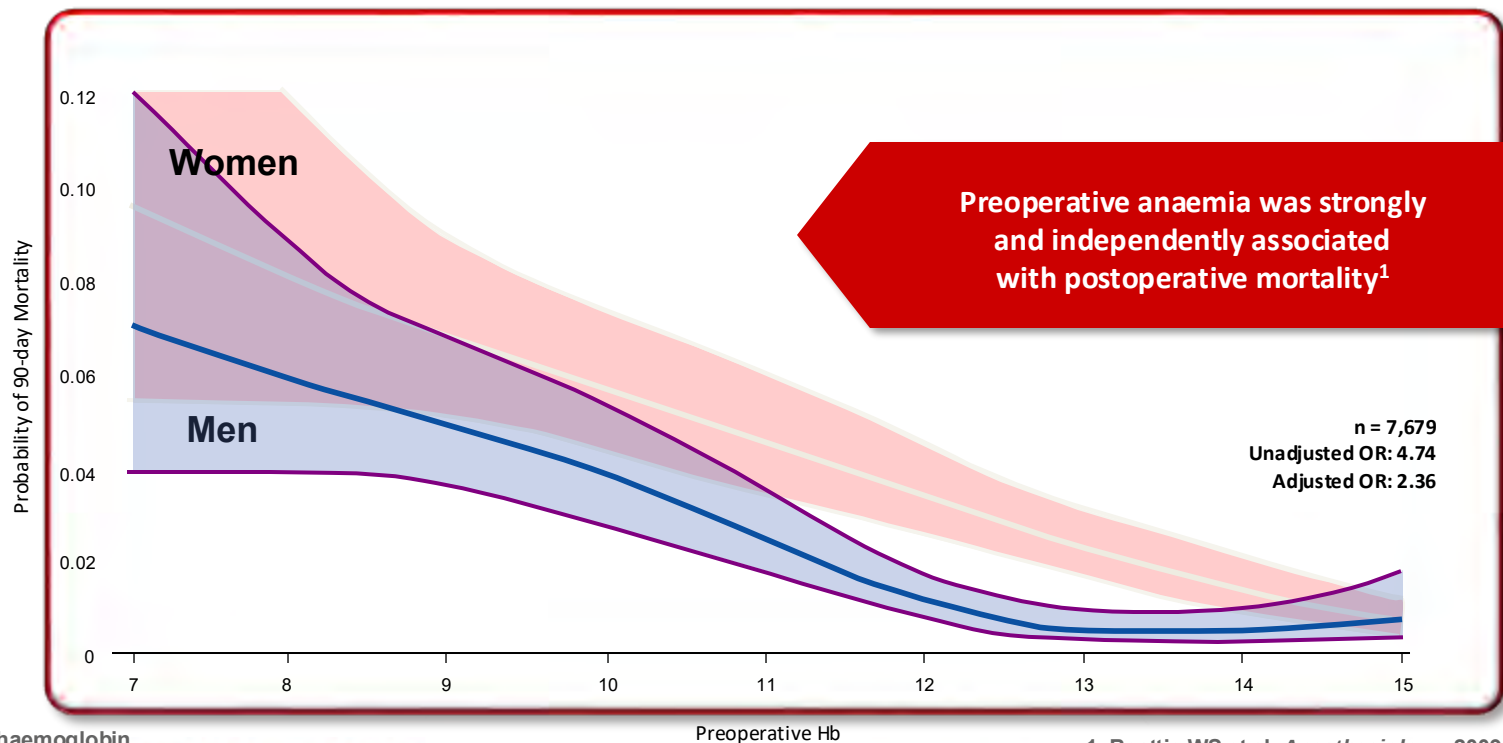
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CONSEQUENCES OF ANAEMIA – MORTALITY¹



OR = odds ratio; Hb = haemoglobin

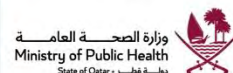
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1. Beattie WS et al. *Anesthesiology*. 2009;110:574–581

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LOCAL EXPERIENCE

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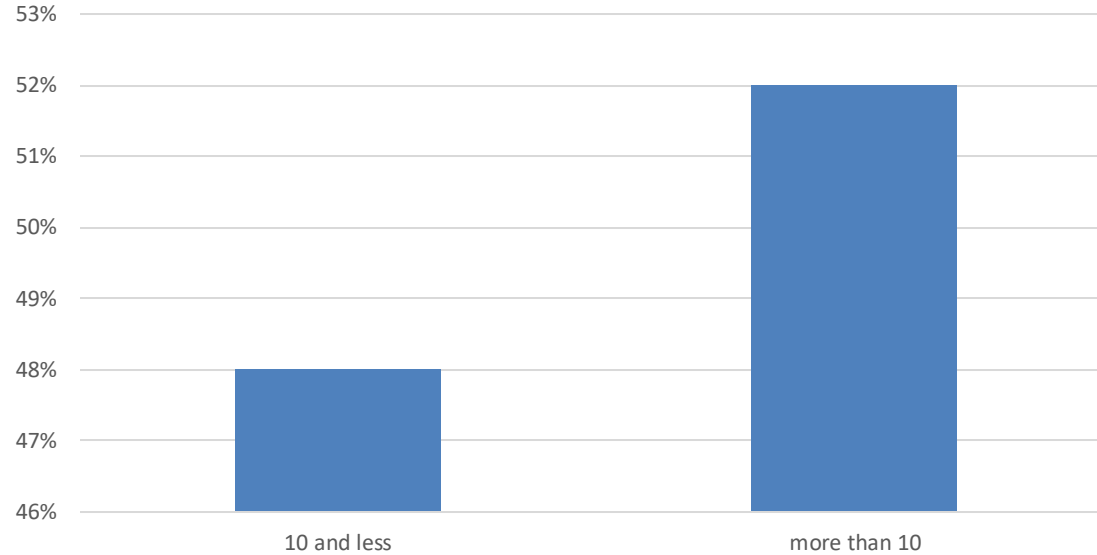


DATA OF PREOPERATIVE PATIENTS AT KAUH YEAR 2021

- Total number of 970 preoperative patients
- Males = 458
- female = 510
- 463 (48%) patients have Hb level <10g/dl
- 73% of Preoperative Male Patients have Hb level<13
- 79% of Femal Patients have Hb level<12



PREOPERATIVE PATIENTS HB<10 & >10 IN %



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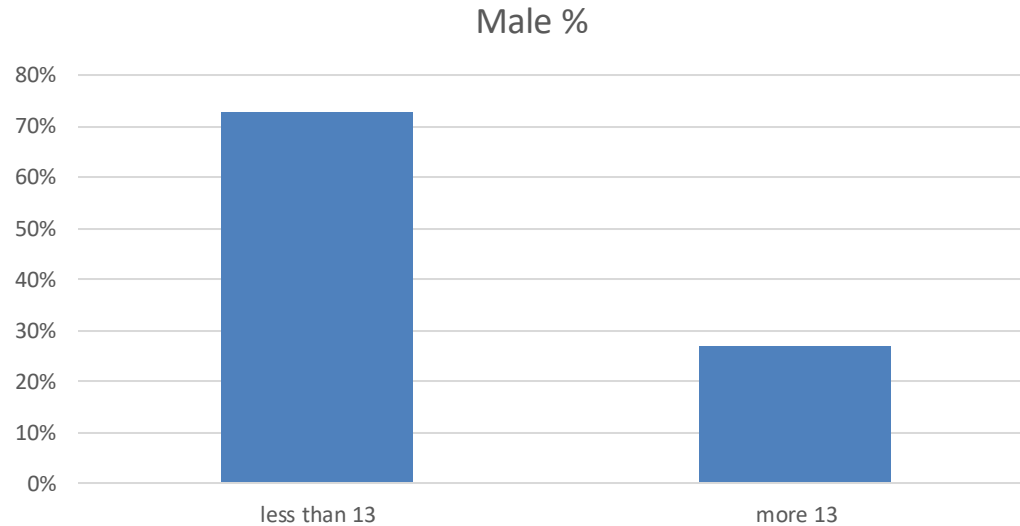


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COMPARISON BETWEEN NORMAL HB & LOW HB IN PREOPERATIVE MALE PTIENTS



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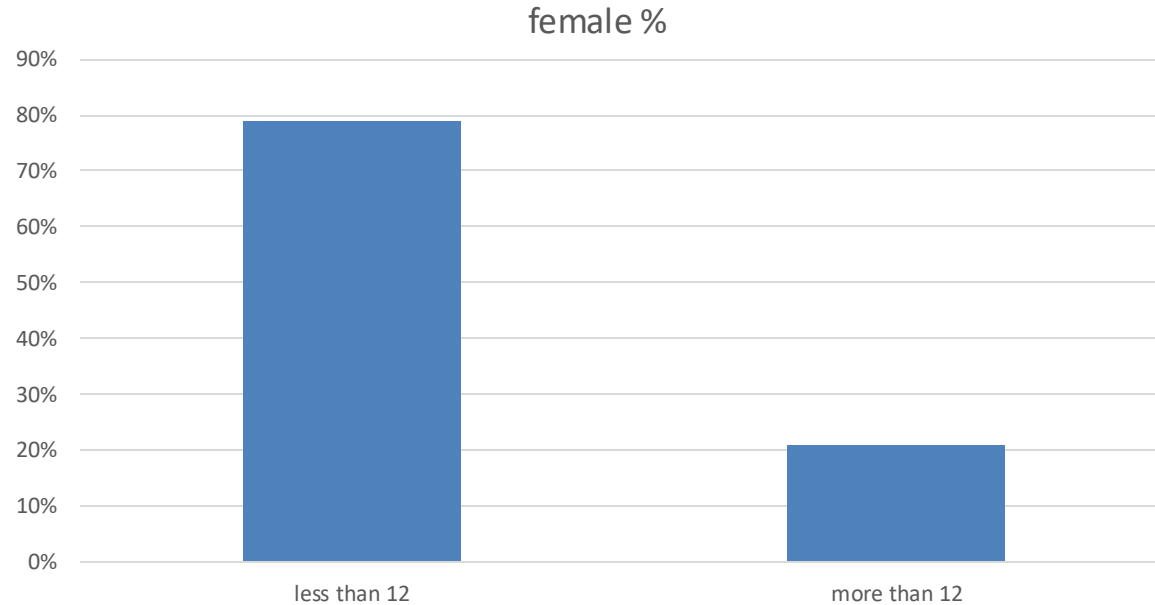
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COMPARISON BETWEEN NORMAL HB & LOW HB IN PREOPERATIVE FEMALE PTIENTS



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HOSPITAL TRANSFUSION COMMITTEE

PREOPERATIVE ANAEMIA MANAGEMENT

WORKING GROUP

Hematology and Transfusion Medicine

Nursing

Surgery

Anesthesia

OPD

OB/Gye

Information Technology (HIS)

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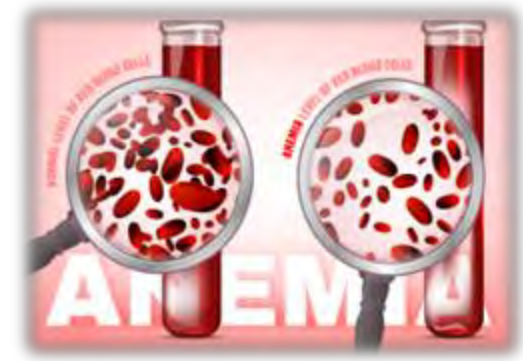


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DEFINITION

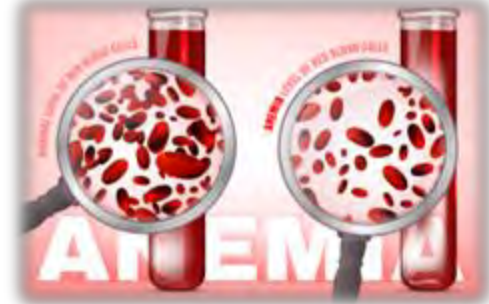
- anemia clinic is a patient blood management strategy to improve and support patient outcomes by addressing anemia as a potentially modifiable risk factor.



PREOPERATIVE ANEMIA

Strategy for Early Detection of Anemia:

- Patients who are having an elective surgical procedure with a risk of blood loss such as cardiac surgery, major orthopedic, vascular and general surgery are identified and assessed 4-6 weeks prior to surgery.
- allows sufficient time to diagnose and manage anemia to avoid risk of transfusion



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IMPLEMENTATION PLANNING

- ✓ Define Qualifications for Anemia Management

Hemoglobin <12 g/dL? <13 g/dL.

Ferritin <100 µg/L? <300 µg/L. ^{1&2}

- ✓ Forms & Flowchart Development
- ✓ Hardwiring in the Electronic Health Record (EHR)
- ✓ **Education/Awareness**
- ✓ Presurgical IV iron & EPO protocol development.
- ✓ Acute blood loss protocol development

1- Judd et al, 2022
2- WHO 2023

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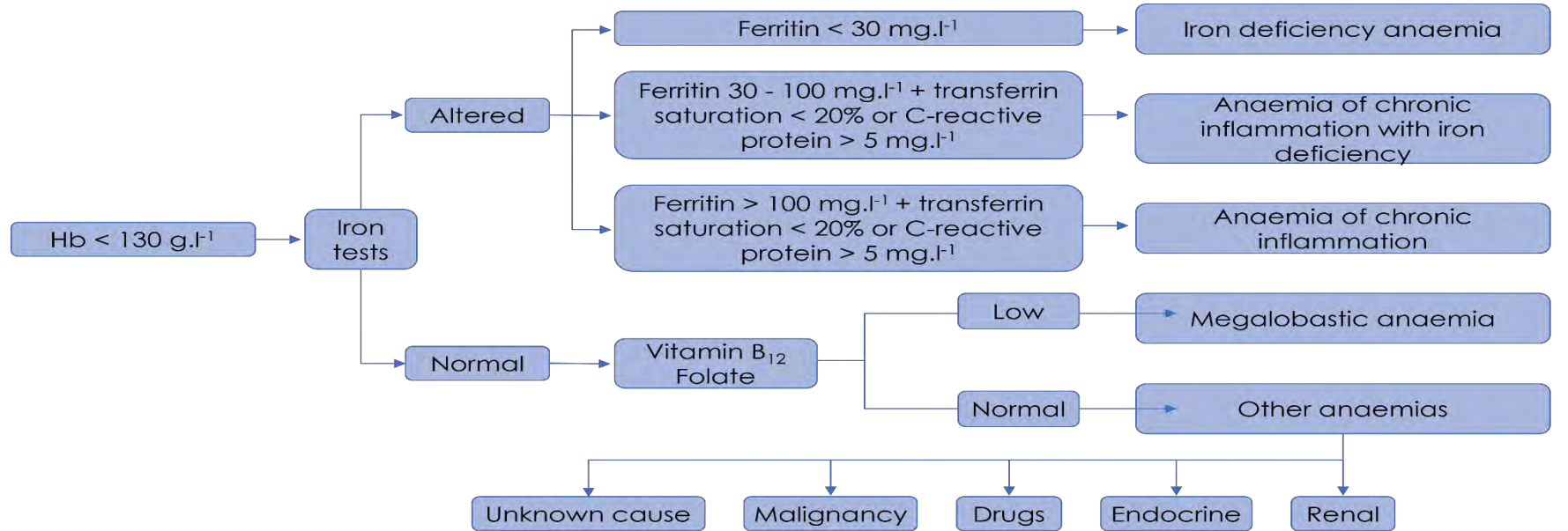


STEPWISE APPROACH

- Begin early, preferably 30-45 days before date of surgery.
- With high risk or known anemia, consider blood management referral to hematology for preoperative optimization assessment.
- Consider iron deficiency or depletion as a modifiable risk factor which can be corrected.

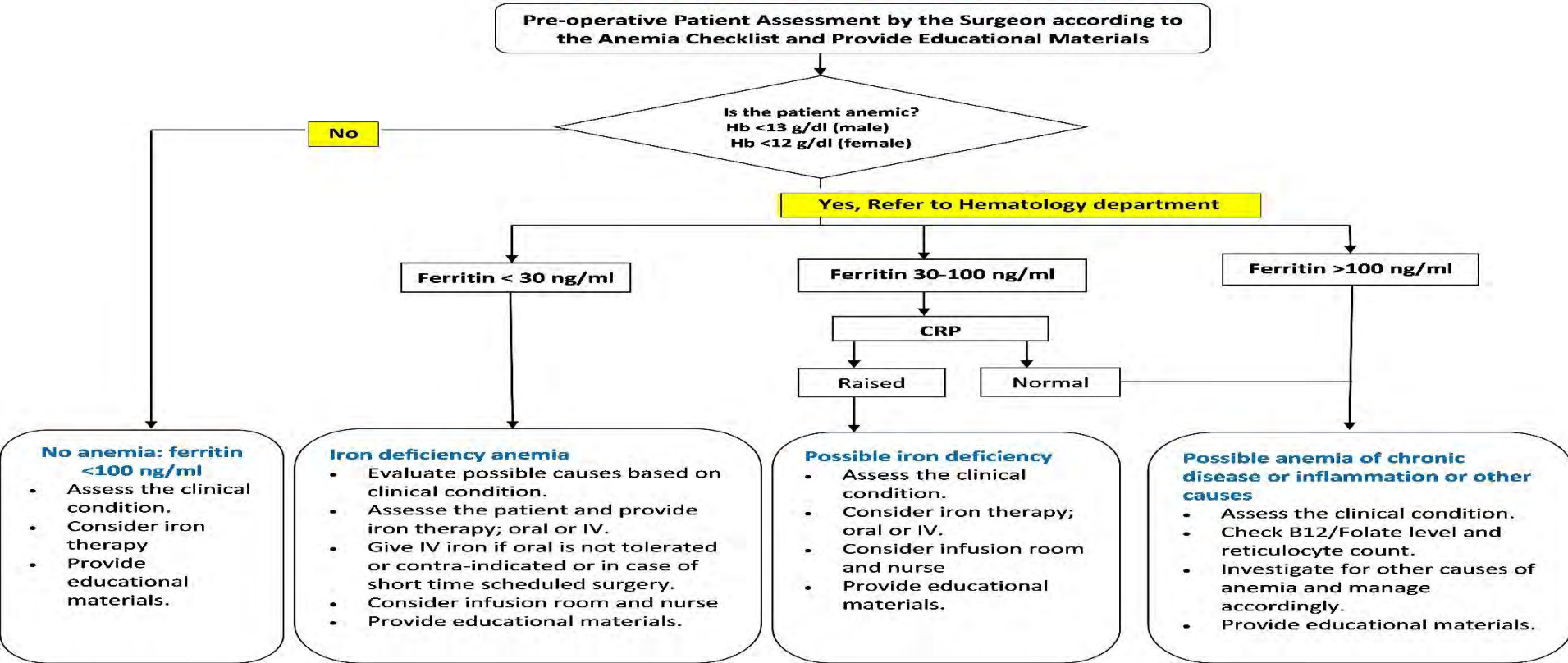


ALGORITHM FOR CLASSIFICATION OF PERIOPERATIVE ANEMIA¹



1. Muñoz M et al. *Anaesthesia*. 2017;72:233–247

King Abdulaziz University Hospital Pre-operative Anemia Assessment Flowchart



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Pre-operative Patient Assessment

ANEMIA CHECKLIST

No	Description	Yes	No
	Heavy Menstruation	☐	☐
	• Balanced Diet Explain		
	CBC	☐	☐
	P.B.F	☐	☐
	Retics	☐	☐
	S. Ferritin	☐	☐
	T.I.B.C	☐	☐
	S. Iron	☐	☐
	S. B12	☐	☐
	S. Folate	☐	☐
	TSH	☐	☐

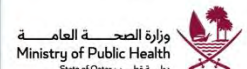
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Pre-operative Patient Assessment

ANEMIA CHECKLIST

No	Description	Yes	No
	• Symptoms related to anemia:		
	Fatigue	☐	☐
	SOB	☐	☐
	Dizziness or lightheadedness	☐	☐
	• Symptoms related to infection or malignancy:		
	Fever	☐	☐
	Weight loss	☐	☐
	Loss of appetite	☐	☐
	Night sweats	☐	☐
	• Symptoms related to chronic blood loss:		
	Melena	☐	☐
	PR bleeding	☐	☐
	Heamoptysis	☐	☐
	Heamatemesis	☐	☐

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King Abdulaziz University Hospital Differential Diagnosis Chart for Anemia

Lab Values	Iron Deficiency	Thalassemia	B ₁₂ Deficiency	Folic Acid Deficiency	Aplastic Anemia	Anemia of Chronic Disease	Acute Blood Loss	Chronic Blood Loss	Hemolytic Anemia
Hb 12-16 g/dL	Low	Low	Low	Low	Low	Low	Low	Low	Low
MCV 80-100	Low	Normal	High	High	Normal	Normal	Normal	Low	Normal
MCH	Low	Normal	Normal to low	Normal to low	Normal	Normal	Normal	Low	Normal
MCHC	Low	Normal	High	High	Normal	Normal	Normal	Low	Normal
Reticulocytes	Normal to low	High	Low	Normal	Low	Normal	Normal	Normal to high	High
Serum iron 5-100	Low	High	Normal	Normal	Normal +/-	Low	Normal	Low	High
TIBC 250-450	High	High	Normal	Normal	Normal +/-	Low	Normal	Low	Low
Bilirubin	Normal to low	High	Normal	Normal	Normal	Normal +/-	Normal	Normal to low	
Platelets	Normal to high				Low	High			
Other findings	RDW high		Low B ₁₂ level	Low folate level	Low WBCs				
S. Ferritin	low	High	Normal	Normal	Normal +/-	High +/-	Normal	Low	

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PATIENT INFORMATION FOR EDUCATION

What is anemia?

Anemia is defined as hemoglobin <13 g/dL for male and <12.5 g/dL for female patients.

Can I have surgery if I am anemic?

Don't proceed with elective surgery if you are anemic, until properly diagnosed and treated. Anemia is common, presenting in approximately 1/3rd of patients undergoing elective surgery

How is anemia treated before surgery?

In most situations, anemia can be corrected with intervention preoperatively. Interventions, including B12, IV Iron infusions, and growth factors can be employed to achieve a safe hemoglobin count prior to surgery.

Why is it important to treat pre-operative anemia?

Surgical patients with anemia are at increased risk for morbidity and mortality and are likely to be transfused with red cells. Red cell transfusion itself also increases morbidity and mortality. Therefore, detection and treatment of pre-operative anemia as part of patient blood management is crucial

When do you give iron infusions?

An iron infusion may be given if a person's blood counts are so low that taking iron supplements or increasing their daily intake of iron-containing foods would be ineffective or too slow in increasing their iron levels.

How can I increase my hemoglobin before surgery?

Delaying your surgery for a few weeks will give you time to make the necessary diet and medication changes to raise your hemoglobin level. Your doctor may advise you to eat foods that are high in iron to build up the iron supply in your blood.

What is the minimum hemoglobin for surgery?

Recently updated guidelines from the American Society of Anesthesiology recommend transfusion if hemoglobin level is less than 7 g/dL and that transfusion is rarely necessary when the level is more than 10 g/dL.

When should you transfuse before surgery?

Pre-operative blood transfusion is recommended only in patients with persistent bleeding, urgent or emergency surgery and in surgery where operations cannot be delayed



CLINICAL BENEFIT

Through evaluation of statistical data

- Raise hemoglobin prior to surgery
- Decrease need for RBC transfusion
- Prevent/limit prolonged postoperative anemia
- Decrease blood utilization (cost saving)
- Supports decreases in LOS, readmission, infection rates
- Support improved patient outcomes



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KEY MESSAGES

- Strong **leadership** is required to establish and run a PBM program.
- **Management of anaemia preoperatively will lead to better patient outcome and add to quality & care of our patient.**
- There is growing evidence suggesting that PBM programs are achieving change, resulting in significant reductions in **blood utilization** while improving **patient outcomes** and **reducing costs**.



Patient Blood Management Programs



**A hospital-based philosophy that
every drop of blood counts**

“our own blood is still the best thing to have in our veins”

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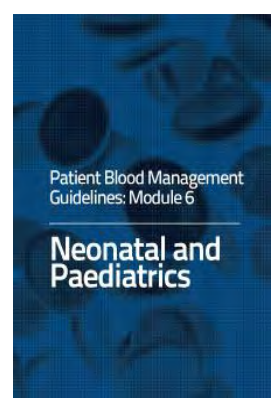
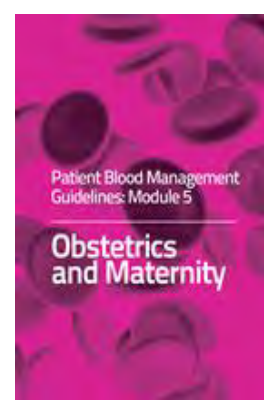
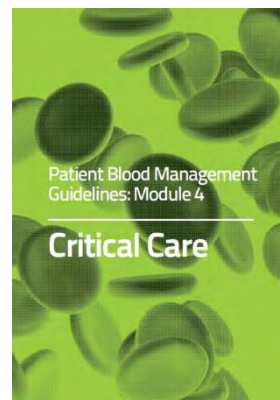
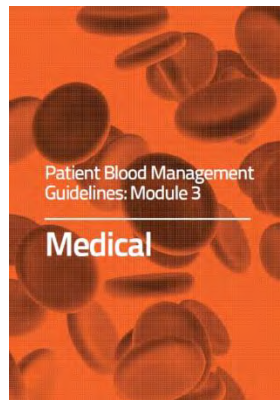
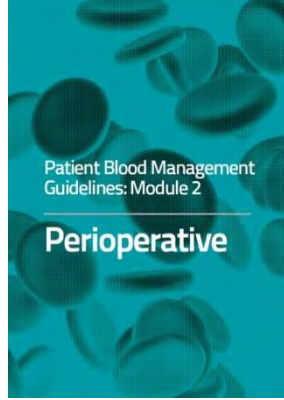
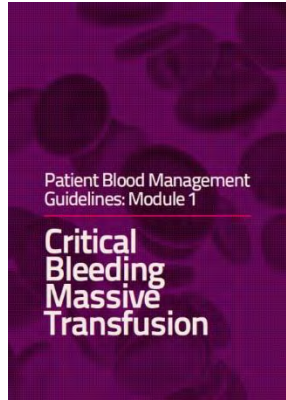


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Patient Blood Management Guidelines



www.blood.gov.au

www.blood.gov.au/pbm-guidelines

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