

Standard Operative Procedure

Anemia in CKD

Special Region (1)

Union Of Myanmar

Version 1.0

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Approved by: Internal Medicine Unit

1. Introduction

Anaemia in CKD¹ is defined as Hb < 13 g/dl in male or < 12 g/dl in female.

It becomes more common as CKD progresses from CKD Stage 3 downwards and is also a nearly universal complication as CKD progresses. Understanding the underlying types is essential for targeted therapy:

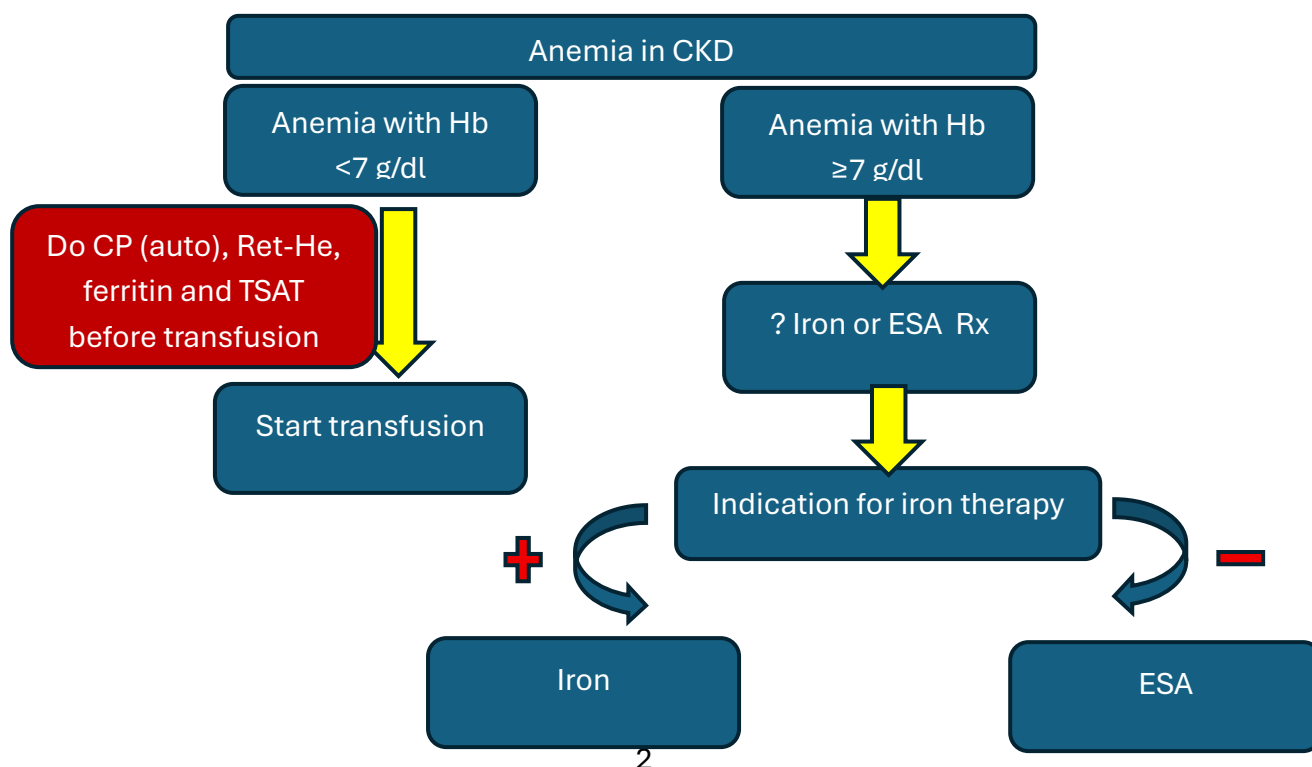
- **Iron Deficiency Anaemia (~50–70%):** The most common cause. It is divided into **absolute deficiency** (depleted stores) and **functional deficiency** (iron is present but cannot be mobilized due to high inflammation/hepcidin).
- **Anaemia of Chronic Disease/Erythropoietin Deficiency (~20–30%):** Primarily due to reduced EPO production by the kidneys and shortened red cell survival.
- **Mixed/Other Etiologist (<10%):** Including Vitamin B 12 or Folate deficiency, hyperparathyroidism, and systemic inflammation (uremic toxins).

2. Investigation

First line investigation: CP (auto) including Reticulocyte series including reticulocytes and Ret-He, Ferritin, and TSAT.

Investigation to be considered: If anaemia is severe or refractory, order Vitamin B 12, Folate, LDH, Haptoglobin, Peripheral Smear, PTH and TSH to rule out non-renal causes.

3. Consideration for treatment



4. Blood transfusion

Indicated in patients with Hb < 7 g/dl.

Type of blood transfusion: Red cell concentrate is preferable to whole blood if possible.

5. Iron treatment

One of the following criteria should be met to Initiate iron therapy:

- Ret-He <31 pg²
- Haemodialysis CKD if ferritin ≤500 ng/ml and TSAT ≤30%¹.
- Non-dialysis CKD¹ if:
 - Ferritin <100 ng/ml and TSAT <40%, or
 - Ferritin 100–<300 ng/ml and TSAT <25%.

Route	Medication	Elemental Iron	Dose
Oral	Ferrous Sulphate	65 mg / tab	325 mg BID or TDS
	Ferrous Fumarate	106 mg / tab	322 mg D or BD
	Ferric Citrate	210 mg / tab	1g TDS with meals
IV	Iron Sucrose	100 mg / vial	100–200 mg per session
	Ferric Carboxymaltose	500 mg / vial	500–1000 mg single dose

Administration of iron sucrose intravenous infusion

Haemodialysis (HD): 100 mg slow IV push/infusion over 15 mins during 10 consecutive dialysis sessions (Total 1000 mg).

Non-Dialysis (ND): 200 mg slow IV push/infusion on 5 separate occasions within 14 days (total 1000 mg).

Note

Hold Iron if Ferritin > 700 ng/mL or TSAT $\geq$ 40 %. Or Ret-He > 31pg.

Suspend iron during active systemic infection.

Ferric Citrate is unique because it is a "dual action" medication. It is the only iron supplement specifically FDA-approved to treat both **iron deficiency anaemia** and **hyperphosphatemia** (high phosphorus levels) in CKD patients.

6. Erythropoiesis-Stimulating Agent (ESA) treatment

Use ESAs only when iron stores are replete, but Hb remains below target.

When to start ESA: Hb < 10.0 g/dL

Medication	Route	Dialysis (HD) Dose	Non-Dialysis (ND) Dose
Epoetin Alpha/beta	SC / IV	50–100 U/kg 3x weekly	50–100 U/kg once weekly
Darbepoetin Alfa	SC / IV	0.45 mcg/kg IV or SC weekly, OR 0.75 mcg/kg every 2 weeks	0.45 mcg/kg every 4 weeks

Note

If Hb increases by >1 g/dL in 2 weeks, reduce dose by 25%.

Contraindications: Uncontrolled Hypertension. Pure Red Cell Aplasia (PRCA), Hypersensitivity, recent myocardial infarction and recent ischemic stroke

Target Hb – 10- 11.5 g/dl . if > 11.5 g/dl , reduce dose (30 % of previous ESA dose) due to increased risk of stroke and cardiovascular events.

7. Reference

1. KDIGO Anaemia in CKD Guideline, 2026.
2. UK Kidney association, Anaemia in CKD Guideline, 2024 September.
3. Anaemia in CKD Guideline, NICE Guideline, NG203.

