Anemia in CKD

Screening and diagnosis, iron therapy, IV iron administration and hypersensitivity, ESA/HIF-PHI therapy, and red blood cell transfusion.

2026 KDIGO Clinical Practice Guideline
Anemia in Chronic Kidney Disease
KDIGO Anemia Work Group · Kidney Int 2026;109(1S):S1–S99

FORMAT *Condensed from recommendations + practice points across Chapters 1–4.*

1 Screening & Diagnosis

–	GUIDANCE
Test	CBC, reticulocytes, ferritin, TSAT — G3 annually, G4 twice/yr, G5/G5D q3mo (more often on ESA/HIF-PHI or rapid progression)
Anemia	Hb <13 g/dl (M), <12 g/dl (F)
Iron deficiency	Not on dialysis/PD: ferritin <100 + TSAT <40%, or ferritin 100–300 + TSAT <25%. HD: ferritin ≤500 + TSAT ≤30%
Severe iron deficiency	Ferritin <45 µg/l (or <100 in select cases); if ferritin unavailable, MCV <80 fl without known genetic cause
Unexplained anemia	Expanded panel: smear, haptoglobin, LDH, CRP, B12, folate, LFTs, SPEP/free light chains + urine Bence-Jones, TSH, PTH, stool occult blood — refer to hematology if non-renal cause suspected

2 Iron Therapy — Initiation & Monitoring

–	GUIDANCE
HD (G5HD)	Initiate if ferritin ≤500 + TSAT ≤30% (2D); use i.v. iron over oral (2D), proactive dosing to maintain stable iron status
Non-dialysis/PD	Initiate if ferritin <100 + TSAT <40%, or ferritin 100–300 + TSAT <25% (2D); oral or i.v. based on values, preference, severity, cost (2D)
Withhold	Reasonable to withhold if ferritin >700 ng/ml or TSAT ≥40%
Monitoring	Hb/ferritin/TSAT q3mo (non-dialysis/G5PD), q1–3mo (G5HD); more frequent with ESA/HIF-PHI dose changes, blood loss, recent hospitalization, or overshooting target
Oral → i.v. switch	If insufficient effect after 1–3mo of optimal oral regimen or poor tolerability; suspend iron during systemic infection

3 IV Iron & Hypersensitivity Reactions

–	GUIDANCE
Safety	Administer only with capability to manage acute hypersensitivity/hypotension; premedication and test doses not routinely necessary
Mild reaction	Nonspecific symptoms ± minor urticaria → stop infusion, observe/retrial after steroid or H1 blocker, restart at 25–50% rate
Moderate reaction	Severe chest pain, cough, tachycardia, hypotension, severe urticaria → stop, IV fluids, IV hydrocortisone 100mg + H1 blocker, restart at 25–50% rate if resolved or switch preparation
Severe reaction	Wheezing, stridor, cyanosis, hypotension, tachycardia → stop, IV fluids, O_2, IM adrenaline 0.5mg 1:1000, IV corticosteroid, bronchodilator, admit; avoid future i.v. iron
Iron deficiency, no anemia	Ferritin <30 + TSAT <20%: consider oral or i.v. iron treatment

4 ESA/HIF-PHI — Initiation & Targets

–	GUIDANCE
Before starting	Address all correctable causes of anemia first (iron deficiency, inflammation, hypothyroidism, B12/folate, GI blood loss)
First-line	ESA suggested over HIF-PHI once correctable causes addressed (2D); do not combine ESA + HIF-PHI
Initiate ESA	G5D: Hb ≤9.0–10.0 g/dl (2D). Non-dialysis/transplant/children: individualize on symptoms, benefit of higher Hb, and harms of transfusion or ESA (2D)
Target	Adults on ESA: target Hb <11.5 g/dl (1D) — individualize for children
Avoid HIF-PHI	Active/recent cancer (<2–5y remission), ADPKD, proliferative retinopathy, pulmonary HTN, pregnancy (contraindicated), prior CV/thromboembolic events, hepatic impairment

5 ESA/HIF-PHI — Dosing, Monitoring & Hyporesponsiveness

–	GUIDANCE
ESA route	Subcutaneous for non-dialysis, G5PD, transplant recipients; either route by preference/practice/cost in G5HD
ESA monitoring	Hb q2–4wk after start/dose change (avoid rise >1.0 g/dl per interval); q3mo maintenance; don't adjust dose >q4wk; suspend during hospitalization for stroke/access thrombosis/thromboembolism
HIF-PHI monitoring	Hb q2–4wk then q4wk; thyroid function first 3mo with roxadustat; discontinue after 3–4mo if no response; suspend with CV/thromboembolic events or new cancer
Hyporesponsiveness	Identify/treat reversible causes first; if anemia symptomatic/functionally limiting and cause not found, consider 3–4mo HIF-PHI trial and/or transfuse

6 Red Blood Cell Transfusion

–	GUIDANCE
Decision basis	Base on symptoms/signs attributable to anemia, not an arbitrary Hb threshold
Transplant candidates	Avoid transfusion when possible to minimize allosensitization risk
Favor transfusion when	ESA/HIF-PHI ineffective (hemoglobinopathy, bone marrow failure, resistance) or harmful (active/prior malignancy, prior stroke); acute anemia needing rapid correction (hemorrhage, unstable CAD) or preoperative correction
Reduction strategies	Minimize phlebotomy, prefer less invasive procedures, continue ESA/HIF-PHI/iron in hospital unless contraindicated, use Hb trend not absolute value, avoid transfusion in asymptomatic chronic anemia

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