CKM Anemia Guideline for Healthcare Professionals

Guiding Principles: Patients with CKD are at risk of anemia which can contribute to **fatigue and breathlessness.** Common management strategies include the use of erythropoiesis stimulating agents and iron supplementation. Blood work related to anemia is typically done monthly for CKD patients; this **could be decreased to every 3 months** for conservatively managed patients but should be based on patient preference and symptoms.

GFR 15 - 5 | Slow Decline/Deteriorating | Last 0-5 years of life

For CKM patients, anemia is treated with the **goal of decreasing fatigue and dyspnea**, as opposed to reducing cardiac mortality or morbidity.

Interventions should continue only for so long as they are of symptomatic benefit. It should be explained to patients and caregivers ***early*** *on* that there may come a time when the interventions no longer benefit the patient, at which time they would be stopped.

- See: Fatigue Guideline
- See: Breathlessness Guideline

GFR 5 - 0 | Intensive/Near Death | Last 0-2 months of life

As the patient nears the end of life, it is no longer appropriate to manage fatigue and dyspnea via these interventions and they should be stopped. Providing supportive care to address fatigue and using medications such as opioids to manage dyspnea are appropriate interventions at this time.

- See: Fatigue Guideline
- See: End of Life Breathlessness Algorithm

Objectives: To achieve adequate haemoglobin and iron levels in kidney failure patients. **Note that interventional guidelines do not replace individualized care and clinical expertise.**

Iron Protocol for Conservatively Managed Patients

TSAT (Transferrin Saturation) 20% - 40%:

- This is considered iron-replete; maintain iron stores.

TSAT (Transferrin Saturation) <20%:

- If patient's iron stores are low and if patient is not already on oral iron supplement, contact most responsible healthcare provider to consider low dose therapy.
- If receiving oral iron, increase to next incremental tolerated dose (see below).
- An IV iron regime may be considered if the patient is unable to tolerate or reach target levels with oral iron (see below).

Drug	Elemental Iron/Tablet	Dose Adjustment Increment (increase or decrease by)	Maximum dose
Polysaccharide Iron Complex	150 mg/150 mg	150 mg tablet	300 mg/day
Ferrous Sulfate	60 mg/300 mg	300 mg tablet	900 mg/day
Ferrous Fumerate	100 mg/300 mg	300 mg tablet	600 mg/day
Ferrous Fumerate (liquid)	100 mg/5 mL	5 mL	10 mL/day
Ferrous Gluconate	35 mg/300 mg	300 mg tablet	900 mg/day
Proferrin*	11 mg/11 mg	11 mg tablet	33 mg/day

Intermittent IV iron infusion – Adults Venofer (iron sucrose)

Administer usual concentrations up to 2 mg/mL (mixed in Normal Saline) but higher concentrations may be used.

- Infuse over the following time periods:
  - 200 mg or less: At least 15 minutes.
  - 300 mg: At least 90 minutes.
  - 400 mg: At least 150 minutes.
  - 500 mg: At least 210 minutes.

(taken from AB parenteral monograph)

Note: Oral iron may cause constipation

* Proferrin consists of a blood product (heme iron peptide) made from animal haemoglobin and should NOT be taken if allergic to meat products of if animal or blood-based products are not allowed in the diet (i.e., vegan, Jehovah Witness)

(Adapted from AHS Anemia Management Guideline (June 2017), Alberta Kidney Care (AKC) - CKD, PD, HD Programs)

HGB/ESA (Erythropoietin stimulating agents) Protocol & Dose Adjustment Schedule for Darbepoietin (Aranesp®)

General Guidelines:

1. Target Hgb: 95-110 g/L.
2. Notify most responsible health care provider when:
    - Hgb drops >20 g/L over 3 months.
    - Hgb remains out of target after more than 3 frequency changes.
3. If Hgb > 120 g/L, hold darbepoietin.
4. Maximum dose of darbepoietin is 150 mcg SC q2 weeks.
5. Note: Darbepoitin is to be administered SC.

Darbepoietin starting dose when Hgb <95g/L and iron replete.

- Correct iron deficiency first - this is required for AB Blue Cross funding for darbepoietin.

< 70 kg	40 mcg q2weeks
70 – 100 kg	60 mcg q weeks
> 100 kg	80 mcg q2weeks

Darbepoietin adjustment schedule if Hgb BELOW target.

- If Hgb ≤95 g/L and increased ≤10 g/L over the previous 3 months, increase frequency or dose.
- If Hgb ≤95 g/L and increase was between 10-20 g/L, do not change dose.

Current Frequency	Change to:
q2weeks	increase dose
q3weeks	q2weeks
q4weeks	q3weeks

Darbepoietin adjustment schedule if Hgb ABOVE target or rising significantly

- If Hgb ≥110 g/L or if Hgb is between 95-110 g/L and this has risen by >20 g/L over the previous 3 months, decrease frequency or dose.

Current Frequency	Change to:
q2weeks	q3weeks
q3weeks	q4weeks
q4weeks	decrease dose

Dose Adjustment Schedule for epoetin alpha (Eprex®)

Dose per Week (IU)	epoetin alpha Syringe Size/Dose Frequency in Days						
	2,000 IU	3,000 IU	4,000 IU	5,000 IU	6,000 IU	8,000 IU	10,000 IU
Discontinue **epoetin alpha**							
1994 - 2100	q7d	q10d	q14d	q18d	q21d	-	-
2333 - 2668	q6d	q8d	q12d	q14d	q18d	q21d	-
2800 - 3112	q5d	q7d	q10d	q12d	q14d	q18d	-
3300 - 3500	q4d	q6d	q8d	q10d	q12d	q16d	q21d
3888 - 4375	-	q5d	q7d	q8d	q10d	q14d	q18d
4667 - 5250	-	q4d	q6d	q7d	q8d	q12d	q14d
5600 - 6000	-	-	q5d	q6d	q7d	q10d	q12d
7000	-	-	q4d	q5d	q6d	q8d	q10d
8000 - 8750	-	-	-	q4d	q5d	q7d	q8d
9333 - 10500	-	-	-	-	q4d	q6d	q7d
11200-11667	-	-	-	-	-	q5d	q6d
14000	-	-	-	-	-	q4d	q5d
Assess reasons for hyporesponsiveness; consult nephrologist or designate							

INCREASE

DECREASE

Note:

1. To increase dose, move down one box. To decrease dose, move up one box.
2. If the patient's scenario does not fall into one of the examples above, contact the nephrologist or designate.
3. **Maximum epoetin alpha (Eprex®) dose is 15,000 IU weekly.**
4. Epoetin alpha (Eprex®) should not be increased by greater than 30% at any given time (dose decreases may be greater than 30%).
5. Epoetin alpha to be administered SC.

*Adapted from the AHS Anemia Management Guideline (June 2017), Alberta Kidney Care (AKC) - CKD, PD, HD Programs

Conservative Kidney Management Acronym Legend

Acronym:	Intended Meaning:
ATC	Around the Clock
BID	Twice Daily
CKD	Chronic Kidney Disease
CKM	Conservative Kidney Management
COPD	Chronic Obstructive Pulmonary Disease
CO2	Carbon Dioxide
EOL	End of Life
ESA	Erythropoietin Stimulating Agent
ESKD	End Stage Kidney Disease
GFR	Glomerular Filtration Rate
GI	Gastrointestinal
g/L	Grams per litre
HgB	Hemoglobin
IN	Intranasal
IU	International Units
IV	Intravenous
kg	Kilogram
mcg	Microgram
mg	Milligram
mL	Millilitre

Acronym:	Intended Meaning:
mmol/L	Millimoles per Litre
OTC	Over the Counter
PO	By Mouth
PRN	As Needed
NSAID	Non-steroidal Anti-inflammatory Drugs
q(1-8)d	Every (Time Eg, 2) Days
q(1-8)h	Every (Time Eg, 4) Hours
q(1-8)weeks	Every (Time Eg. 2) Weeks
QHS	At Bedtime
RLS	Restless Leg Syndrome
SC	Subcutaneous
SL	Sublingual
SNRI	Serotonin and Norepinephrine Reuptake Inhibitors
SSRI	Selective Serotonin Reuptake Inhibitors
TCA	Tricyclic Antidepressant
TID	Three Times a Day
>	Greater Than
≥	Greater Than or Equal To
<	Less Than
≤	Less Than or Equal To