

Chronic Maintenance In-Center Hemodialysis Standing Orders

1. Target Weight Management

- a. All new patients will have an initial assessment within the first 4 weeks of starting dialysis and as needed thereafter.
- b. For hospitalizations of >1 week, reassess target weight upon return to outpatient dialysis
- c. If signs or symptoms of fluid overload and patient is at or below target weight, decrease target weight by up to **0.5 kg per treatment** (not to exceed **1.0 kg per week** and **2.0 kg per month**) per nurse assessment and communicate to nephrologist weekly by phone or fax.

2. Vascular Access Management:

a. Cannulation of AV Fistulas

In order to initiate cannulation of a new surgically created AV Fistula, the access must meet the following criteria as assessed by a Registered Nurse and with the use of the on-site ultrasound machine:

- At least six weeks from date of creation
- Greater than 1" total palpable length
- 6mm or greater diameter
- 6mm or less depth

b. Cannulation of AV Grafts

In order to initiate cannulation of new AV Grafts, the access must meet the following criteria as assessed by a Registered Nurse and with the use of the on-site ultrasound machine:

- At least two weeks from date of installation unless otherwise directed by MD
- 6mm or less depth

c. If cannulation criteria are met, proceed with access cannulation.

d. If cannulation criteria are not met, contact surgeon or nephrologist to discuss access plan.

e. For **percutaneous AVFs** (e.g. Ellipsys or WavelinQ), contact nephrologist for orders for use prior to cannulation

f. Guidelines for Cannulation:

- i. Only expert cannulator staff to cannulate new accesses for the first six runs. If no expert cannulator staff available, defer cannulation until next treatment.
- ii. Refer to nephrologist or surgeon for CVC removal after three consecutive treatments with two needles
- iii. Adjust blood flow rates to needle gauge per table below or as ordered by MD:

| Blood Flow rates to Needle Gauge | |
|----------------------------------|----------|
| 200-250ml/min | 17 gauge |
| >250-350ml/min | 16 gauge |
| >350-450ml/min | 15 gauge |

- iv. AV Fistula week one – use 17g needle for arterial, CVC for venous return OR 17g needles for both A&V if approved by Registered Nurse
- v. AV Fistula weeks two and three – 16g needles for both A&V if approved by Registered Nurse
- vi. AV Fistula weeks four and ongoing – advance to 15g needles if approved by Registered Nurse
- vii. AV Graft week one – 16g needles for both A&V
- viii. AV Graft weeks two and ongoing – 15g needles

g. Access Infiltration

- i. Apply cold pack per policy for infiltrations related to access punctures.
- ii. Notify nephrologist if infiltration occurs that prevents dialysis provision that day or if infiltration occurs in new AVF (first 2 weeks of cannulation).

3. Machine Parameters/Default Settings

- Bicarbonate: 33 meq/L
- Sodium: 135 meq/L
- Potassium: per MD order
- QD: 600 ml/min or per MD order
- Qb: per MD order.
- Temperature default: 37 degrees Centigrade

4. Guidelines for use of 1 K+ baths on prevalent patients is as follows:

- a. A 1K+ bath can only be prescribed for patients whose pre-dialysis serum potassium level is equal to or greater than 6.0mEq/L and requires a physician order. Use of 1K+ baths should be rare, as the practice is not associated with improvement in patient outcomes in clinical research studies.
- b. If pre-dialysis potassium level is >6.0 or < 3.0 or patient is placed on a 1 K bath, both the patient and the registered dietitian should be notified by nursing staff.
- c. The bicarbonate machine setting must be set at 33meq/L (or lower if ordered by MD) for 1K+baths
- d. The serum potassium will be checked every week while the patient is on a 1K+ dialysate bath (ICD10 = E87.5)
- e. When on a 1K+ bath and the serum potassium level falls below 6.0, the dialysate will be changed to a 2K+ by the nursing staff.

5. Daily Routine Diet/Fluid Guidelines

- a. Sodium: 1500 - 2000 mg/day
- b. Potassium: 2 - 3 g/day
- c. Phosphorus: 0.8 - 1.2 g/day
- d. Protein: 1.0 - 1.2 g/kg/day
- e. Fluid: 750 mL + amount equal to urine output daily

6. Laboratory Tests: Routine (Annually = Jan; Semi-annually = Jan, Jul; Quarterly = Jan, Apr, Jul, Oct)

- a. Chemistry panel: on admission and monthly (ICD10 = N18.6)
- b. CBC with platelets: on admission and monthly (ICD10 = N18.6)
- c. Hepatitis B surface antigen (HBsAg): (ICD10 = N18.6)
 - i. If the patient is HBsAg negative and hepatitis B surface antibody (Anti-HBs) negative (or anti-HBs is <10 mIU/mL): draw HBsAg monthly
 - ii. Draw HBsAg on admission and annually on all patients
 - iii. While patients are receiving the Hepatitis vaccination series, draw HbsAg at least 14 days after each vaccine.
- d. Anti-HBs: (ICD10 = N18.6)
 - i. Per vaccination protocol
 - ii. Draw on admission and annually on all patients
- e. Total antibody to Hepatitis B core antigen (Anti-HBc): (ICD10 = N18.6)
On admission (if not previously obtained)
- f. Hepatitis C Antibody (HCV Ab): (ICD10 = N18.6) On admission (if not previously obtained) and semi-annually on patients who are HCV Ab negative.
For those new patients with a positive HCV Ab redraw HCV Ab and Hepatitis C RNA by PCR. (Refer to HCV surveillance policy.)
- g. iPTH: Hyperparathyroidism (ICD10 = N25.81) Hypoparathyroidism (ICD10 = E20.8)
 - i. For patients not on IV vitamin D replacement protocol: draw on admission and quarterly
 - ii. For patients on Vitamin D replacement protocol: see doxercalciferol orders
- h. Aluminum: On admission and quarterly only for patients on aluminum containing phosphate binders or sucralfate (ICD10 = N18.6 initial and subsequent draws)
- i. Hemoglobin A1C: (ICD10 = Refer to Patients Problem List for diabetic diagnosis) Quarterly on patients with the diagnosis of diabetes mellitus

7. Lab Testing for Dialysis Adequacy: spKt/V, eKt/V, URR: on admission and monthly (ICD10 = N18.6)

- a. If dialysis run is unusual on the day of the routine blood draw (see description below) do not obtain post dialysis sample.
Reschedule to draw the pre and post dialysis BUN at the next dialysis treatment.

Unusual dialysis run refers to:

- Substantially shortened dialysis session: A dialysis session of less than 2 hours in duration
- Extra dialysis run
- SUF: UF only run, or a sequential UF and dialysis that is not the patient's routine prescription.

b. If the spKT/V result on the routine monthly lab is less than 1.2, check to make sure the dialysis time and dialyzer are as ordered, and the Qb is 300 ml/min or higher. Repeat the spKt/V at the next dialysis. If spKt/V is still less than 1.2 then call the nephrologist for orders.

8. Laboratory Tests PRN

- a. Blood Cultures: (ICD10 = R50.9 fever)
 - i. Patients with a CVC and: a temperature greater than 100.0 F degrees (37.8C) or rigors, draw TWO sets of blood cultures from the access/bloodlines at least 5 minutes apart. Notify MD by phone.
 - ii. Patients without a CVC with a temperature greater than 100.0 F (37.8C) Call MD for orders.
- b. Water and Dialysate Cultures/LAL and colony counts: Obtain these from the machine and treatment station when clinical suspicion warrants. (This is in addition to the routine scheduled cultures).
- c. Access Site Cultures: (ICD10 = T82.7.XXA for the initial culture; T82.7XXD if subsequent culture for same infection) Obtain if clinical signs of infection. Notify MD by phone.
- d. COVID-19 testing: Perform testing (COVID-19 Antigen or COVID-19 PCR) for patients displaying signs and/or symptoms consistent with COVID-19. Notify the physician via fax or phone if the test result is positive or if patient reports a positive result. When administering a COVID PCR test, use ICD10 = Z11.52.

9. Lab Requests for Patients Who Travel: These may be drawn prior to the scheduled travel, at the discretion and request of the accepting unit.

10. Medications/ Routine

- a. Heparin – Systemic Anticoagulant (Follow In-Center Hemodialysis Standing Orders - Heparin Protocol)
- b. Heparin-Catheter Anticoagulant/Post Dialysis Lumen Instillation
 - i. Fill each lumen with 1,000 units/ml heparin post dialysis.
 - ii. Use of 5,000 units/ml heparin requires special physician orders.

11. Medications/PRN

a. Adverse Reactions

NOTIFY:

- **MD by phone of any dialyzer or drug reaction**
- **Pharmacy of any drug reactions**

TREATMENT:

Benadryl; Epinephrine; Solumedrol may be given for Dialyzer Reaction (ICD10 = T78.40XA) or Drug Reaction (ICD10 = T50.995A) as follows:

- i. Diphenhydramine (Benadryl) 25 mg may be given IV and repeated x 1 prn (if the patient is not hypotensive) for chills, fever, rash, itching, and backache related to any of the above noted reactions.
- ii. Epinephrine 0.3 mg IM
- iii. Solumedrol 125 mg IV push over 5-10 minutes

b. Topical Anesthetic (ICD10 = R20.0):Staff Application

Apply a moderate layer of lidocaine 2.5% / prilocaine 2.5% cream (or other generic equivalent) at the site of needle placement 15-60 minutes (preferably 30 or greater minutes) prior to start of hemodialysis.

Patient Application

Dispense to patient: One 30-gram tube of lidocaine 2.5%/prilocaine 2.5%. Directions for use: Apply a moderate layer (approximately 2.5 grams) of cream at site of needle placement 15-60 minutes (preferably 30 minutes or greater) prior to start of hemodialysis. Cover area with occlusive dressing (plastic wrap).

Refills: As needed. Not to exceed one 30-gram tube per 12 dialysis treatments.

c. Tylenol/Acetaminophen (for Pain (ICD10 = R52) or Fever (ICD10 = R50.9) greater than 100.4 F): Give 325 mg 1-2 tablets every 4 hours prn during dialysis. (Check patient's temperature before administration)**d. Nitroglycerin** (for Anginal Chest Pain) (ICD10 = I20.9): Give 0.4 mg (gr 1/150) SL. May Repeat every 5 minutes x 2. **Do not give if systolic BP is less than 100 mmHg.** Notify MD by phone.**e. Oxygen (O₂)** (for O₂ saturation <90%) (ICD10 = R09.02

Hypoxemia): If a patient has symptoms of hypotension, dyspnea, or chest pain, assess for a medical emergency. Before administering O₂, obtain pulse oximeter reading. If O₂ saturation is less than 90%, administer O₂ at 2-5 L/min per nasal cannula or 6-10 L/min per face mask. Titrate O₂ for O₂ saturation of ≥90%.

- For patients on continuous supplemental O₂ at home, administer O₂ per home prescription (ICD10 = Z99.81).
- If patient with new O₂ saturation of <90% that does not resolve with ultrafiltration during dialysis, notify MD by phone prior to the patient leaving the clinic.

- f. **Glucose Paste/Gel Administration for Hypoglycemia** (ICD10 = E16.2). Initial dosing: If patient is alert and symptomatic with a blood glucose between 50 and 79 mg/dL, administer 1 tube/packet (15-24 grams) of glucose paste/gel PO. **Recheck blood glucose in 15 minutes** using the glucometer. Additional dose: If blood glucose result remains less than 80 mg/dL, administer a second dose of glucose paste/gel. Recheck blood glucose in 15 minutes after the second dose of glucose paste/gel. If blood glucose remains less than 80 mg/dL after the second dose and the patient is still symptomatic, call or page the Nephrologist for further instructions.
- g. **Dextrose 50% IV** (for severe symptomatic hypoglycemia/insulin reaction, glucose monitor result below 50) (ICD10 = E16.2): administer Dextrose 50% 50 ml i.e. 25 grams IV x 1 dose. Notify MD by phone.
- h. **Normal Saline** (for muscle cramps or hypotension): Normal Saline (0.9%) IV may be given in 100-200 cc boluses up to 1000 cc.
- i. **Normal Saline (to prevent or evaluate for clotting)**: Normal Saline (0.9%) IV may be given in 50-100 cc boluses
- j. **Seizures**: Initiate Seizure Management protocol and call MD.
- k. **Naloxone**: Please follow assessment for Naloxone use and administration. If the assessment is to administer naloxone, it can be administered as follows (per NKC procedure): Naloxone 0.4mg IV/IM or 4mg intranasal once, followed by contacting emergency response team, if not already done so. May repeat once after 3 minutes, if appropriate.

12. Vaccinations

- a. Hepatitis B Vaccine (ICD10 = Z23): per protocol
- b. Influenza Vaccine (ICD10 = Z23): Should be administered to all patients during the flu season (Oct-April). Exceptions include- contraindications as stated by the physician, or patient refusal.
- c. Pneumococcal Vaccine (ICD10 = Z23): per Pneumococcal Vaccination protocol
- d. COVID vaccination (ICD10=Z23): per protocol

13. Miscellaneous

- a. **Unstable Medical Conditions**: If nursing assessment deems the patient unsafe for dialysis, the hemodialysis treatment may be postponed or terminated at the discretion of the RN (with documentation in the EMR) and the MD notified by phone.
- b. **Severe elevation in blood pressure**: If pre-dialysis systolic BP is greater than 200 mm Hg or if diastolic BP is greater than 120 mm Hg, notify MD by phone and do not initiate dialysis.

- c. **Pre-dialysis hypotension:** If pre-dialysis systolic BP is less than 90 mm Hg, notify MD by phone and do not initiate dialysis.
- d. Initiate On-Dialysis Protein Supplement (ODPS) Program.
- e. Initiate Bowel Protocol, as needed.
- f. Initiate TB Screening per TB Testing Surveillance for Patients Policy.

14. Emergency dialysis Orders

Provision of dialysis services in an emergency depends on the degree of social isolation of both patients and staff, availability of patient transportation for access to care, and the reserve of caregivers to provide care.

During emergencies (earthquake, fire, flood, power-outage, pandemic, etc.), the following procedure will be implemented:

- In a declared emergency in which the NKC Emergency Operations Center (EOC) is convened, standing orders specific to the emergency at hand will be communicated to facilities, staff and medical staff.
- They are subject to change depending on changes in conditions.
- They may vary from facility to facility.
- Nursing services may exercise discretion and clinical judgment in their application.
- Baseline provision of care should include:
 - i. Dialyzer: any single use dialyzer
 - ii. Dialysate: $[Ca^{++}]$ and $[K^{+}]$ per patient prescription: if emergency obligates decreased frequency or shortened time call physician for K^{+} orders if normal bath is $<$ or $>$ $2K^{+}$.
 - iii. Heparinization: 3.0 cc (3000 units) bolus.
 - iv. Time: provision of maximum dialysis time feasible given the nature of the emergency, in conjunction with instructions from the EOC.
 - v. Kayexalate (Hyperkalemia ICD10 = E87.5) provide patient with Kayexalate as needed from disaster supplies (30 gm).

Matthew Rivara, MD

Physician Name (Please Print)



January 5th, 2026

Physician Signature

(see Initial Orders)

Date

Patient Name

MEC reviewed: 12.11.25

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Chronic Maintenance In-Center Standing Orders - Doxercalciferol

Doxercalciferol (ICD10 – N25.81)

1. Targets iPTH 150 – 600 pg/ml
Calcium \leq 10.2 mg/dl

2. Labs:

- Draw monthly calcium (in NKC Profile) unless otherwise indicated below.
- Draw iPTH quarterly (Jan-Apr-Jul-Oct) unless otherwise indicated below.
- Draw labs with the routine monthly lab draws unless otherwise indicated below.
- If monthly calcium >10.2 , redraw calcium in 1 week (maximum 3 draws per month).
- If calcium >10.5 , notify physician for guidance on management.

3. Dosing:

- Give doxercalciferol doses IV, 3x/week with dialysis. If patient dialyzes $>3x/week$, ensure doses are spaced evenly 3x/week throughout the week. If patient runs only 1 or 2 times per week administer the dose with each dialysis i.e. qweek or 2x/week, respectively.
- Always use the most recent calcium and iPTH when applying algorithms.
- If the algorithm indicates to increase the doxercalciferol dose to >7 mcg, contact nephrologist for instructions.
- If the algorithm indicates to decrease the doxercalciferol dose to <1 mcg, hold doxercalciferol dose

4. Incident Patient Algorithm:

- Incident patient = patient new to dialysis or established patient who has not received any paricalcitol or doxercalciferol within past 6 months.
- Do not start doxercalciferol if calcium >9.8 , monitor calcium monthly
- If calcium is ≤ 9.8 give doxercalciferol at the dose indicated in Table 1 and draw next iPTH in two months, or at next quarterly labs, whichever is sooner.

| Table 1: Incident Patient Doxercalciferol Dosing | |
|--|------------|
| iPTH (pg/ml) | Dose (mcg) |
| <300 | 0 |
| 300 – 450 | 1 |
| >450 – 600 | 2 |
| >600 | 3 |

- Once doxercalciferol started and result on next iPTH draw known, proceed per Established Patient Algorithm below.

5. Established Patient Algorithm

- If calcium ≥ 10.2 mg/dl, hold doxercalciferol dose
- If calcium < 10.2 mg/dl, determine doxercalciferol dose using the iPTH brackets in Table 2 and the following algorithm.

| Table 2: Established Patient iPTH Brackets | |
|--|---------|
| iPTH (pg/ml) | Bracket |
| < 150 | A |
| 150 – 450 | B |
| >450– 600 | C |
| >600 | D |

- Change current doxercalciferol dose based on most recent iPTH result compared to the prior iPTH result:
 - Hold dose if iPTH is in bracket (A)
 - 1 mcg increase if patient switched from iPTH bracket (B) to bracket (C) or from bracket (C) to bracket (D) or patient remains in bracket (D)
 - 2 mcg increase if patient had two or more iPTH bracket increase
 - 1 mcg decrease if patient switched from iPTH bracket (D) to bracket (C) or from bracket (C) to bracket (B)
 - 2 mcg decrease if patient had two or more iPTH bracket decrease, unless patient switches to bracket (A), in which case hold dose
 - In all other cases keep existing dose

6. Held Dose Algorithm (for established patients)

- If doxercalciferol dose on hold, and most recent calcium < 10.0 mg/dl AND iPTH > 300 pg/ml, then manage doxercalciferol using the following algorithm:
 - Restart with 2mcg dose decrease if iPTH > 300 pg/mL and in bracket (B) (i.e. iPTH > 300 to 450 pg/mL)
 - Restart with 1 mcg dose decrease from previous dose if in bracket (C). If previous dose was 1mcg, restart doxercalciferol at 1mcg if in bracket (C).
 - Restart with the same dose if in bracket (D)
- If doxercalciferol on hold, and most recent calcium is ≥ 10.0 mg/dl AND iPTH > 600 pg/ml, contact nephrologist to suggest starting or increasing cinacalcet

Matthew Rivara, MD

Physician Name (Please Print)

Matthew Rivara

Physician Signature

January 5th, 2026

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Patient Name _____ **NKC#** _____

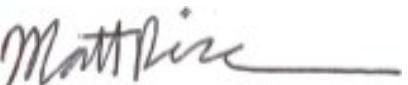
Chronic Maintenance In-Center Hemodialysis Standing Orders - Sodium ferric gluconate

Sodium ferric gluconate (Na Ferric Gluc Cplx in Sucrose) (ICD10- D63.1)

- 1. Goal:** Iron saturation 30 - 50%
- 2. Labs:** (ICD10 = E83.10)
 - a. Draw iron labs quarterly (ferritin and iron saturation) Jan.-Apr.-Jul.-Oct.
 - b. Wait a minimum of 7 days after the last dose of Sodium ferric gluconate before drawing iron labs.
- 3. Hemoglobin:**
 - a. If hemoglobin is greater than or equal to 12 g/dL or ferritin is greater than or equal to 1000 ng/mL, hold Sodium ferric gluconate.
 - b. When hemoglobin then decreases to less than 11.8 g/dL and ferritin decreases to less than 1000ng/mL, restart iron per protocol.
- 4. Infection/Antibiotics:** HOLD IV iron if patient has an infection requiring IV antibiotics. If patient is still receiving IV antibiotics more than 2 weeks, then can resume IV iron dosing at that time.
- 5. Sodium ferric gluconate dosing:**
 - a. Based on most recent iron labs, give IV Sodium ferric gluconate per table below.
 - b. Doses with frequency "every run" may be given up to 3x/week depending on patient's dialysis schedule.
 - c. Maintenance dosing: 125 mg given every 4 weeks. Dose should start the second full week of the month (mid-week run preferable). A full week is defined as a week in which the Sunday falls in the calendar month.

| If | Actions |
|------------------------|---|
| Iron Saturation | IV Sodium ferric gluconate Dose |
| < 20% | 125 mg every run ×6, then give monthly maintenance dose the following month |
| 20 - < 30% | 125 mg every run ×3, then give monthly maintenance dose the following month |
| 30 - 50% | 125 mg every month (maintenance dose) |
| > 50% | Hold Sodium ferric gluconate, recheck iron saturation every month <i>until iron saturation falls below 50% again.</i> Follow rules above. |

Matthew Rivara, MD
Physician Name (Please Print)


Physician Signature

January 5th, 2026
Date

Patient Name
MEC reviewed 12.11.25

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In-Center Hemodialysis Standing Orders – Heparin Protocol

Heparin ICD 10 code: N18.6, End-Stage Renal Disease

Purpose: To provide optimal management of anticoagulation for in-center hemodialysis patients through the use of heparin.

Heparin Dosing: By bolus. Initial Heparin dose per physician order using heparin 1,000 units/ml vial.

1. Maximum initial bolus 8000 units.
2. Doses higher than 8000 units require Medical Director approval.
3. Physician requests for hourly heparin dosing do not require medical director or CMO approval, but all dosing and changes for hourly heparin must be managed by ordering physician.
4. Contact nephrologist for instructions regarding heparin bolus adjustment if patient started on an oral anticoagulant, including either warfarin (Coumadin) or a direct oral anticoagulant (Apixaban/Eliquis, Dabigatran/Pradaxa, Rivaroxaban/Xarleto, or Edoxaban/Savaysa).

Heparin Dosing Adjustment:

1. If clotting, notify MD by fax and increase initial bolus by 500u. Can repeat up once per treatment up to maximum total initial bolus limit of 8000 units. Clotting is defined as:
 - a. Shadows or black streaks in dialyzer, or extremely dark blood.
 - b. Clot formation in drip chambers, venous trap, arterial side header, or other sections of dialysis tubing at rinseback.
2. Decrease initial bolus by 500 units for prolonged bleeding and notify MD. Prolonged bleeding is defined as bleeding for greater than 10 minutes after removal of needles.
3. If pre-dialysis systolic blood pressure is >200 mm Hg or pre-dialysis diastolic blood pressure is >120 mm Hg, hold heparin and notify MD by phone.
4. If there is evidence of fall since last dialysis treatment, bruising, planned same day surgery, or planned same-day dental visit, notify MD by fax and decrease initial bolus by 50%. If signs of head trauma or contusion or active bleeding is present, such as nosebleed, vaginal bleeding, or suspected pericarditis, hold heparin and notify MD by phone.

Matthew Rivara, MD

Physician Name (Please Print)



Physician Signature

January 5th, 2026

Date

Patient Name _____ **NKC#** _____

Chronic Maintenance In-Center Hemodialysis

Standing Orders – Iron Sucrose

Iron Sucrose (Venofer) (ICD10- D63.1)

1. Goal: Iron saturation 30 - 50%

2. Labs: (ICD10 = E83.10)

- a. Draw iron labs quarterly (ferritin and iron saturation) Jan.-Apr.-Jul.-Oct.
- b. Wait a minimum of 7 days after the last dose of iron sucrose before drawing iron labs.

3. Hemoglobin:

- a. If hemoglobin is greater than or equal to 12 g/dL or ferritin is greater than or equal to 1000 ng/mL, hold iron sucrose.
- b. When hemoglobin then decreases to less than 11.8 g/dL and ferritin decreases to less than 1000ng/mL, restart iron sucrose per protocol.

4. Infection/Antibiotics: HOLD IV iron sucrose if patient has an infection requiring IV antibiotics. If patient is still receiving IV antibiotics more than 2 weeks, then can resume IV iron dosing at that time.

5. Iron sucrose dosing:

- a. Based on most recent iron labs, give IV iron sucrose per Table 1 below.
- b. Doses with frequency "every run" may be given up to 3x/week depending on patient's dialysis schedule.
- c. Maintenance dosing: 100 mg given every 4 weeks. Dose should start the second full week of the month (mid-week run preferable). A full week is defined as a week in which the Sunday falls in the calendar month.

Table 1

| If | Actions |
|------------------------|---|
| Iron Saturation | IV Iron Sucrose Dose |
| < 20% | 100 mg every run ×8, then give monthly maintenance dose the following month |
| 20 - < 30% | 100 mg every run ×4, then give monthly maintenance dose the following month |
| 30 - 50% | 100 mg every month (maintenance dose) |
| > 50% | Hold iron sucrose, recheck iron saturation every month <i>until iron saturation falls below 50% again.</i> Follow rules above. |

Patient Name _____

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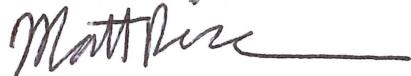
NKC# _____

6. Patients transitioning to iron sucrose from sodium ferric gluconate:

- a. For patients transitioning to iron sucrose in the middle of a sodium ferric gluconate iron repletion course, complete the course with iron sucrose doses, with the total number of doses per Table 1.

Matthew Rivara, MD

Physician Name (Please Print)



Physician Signature

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Methoxy polyethylene glycol-epoetin beta (Mircera®) Protocol

Methoxy polyethylene glycol (PEG)-epoetin beta (Mircera®)

ICD-10 code D63.1 – Anemia in chronic kidney disease

Purpose: To provide optimal management of ESRD-related anemia in dialysis patients

Hemoglobin Target Goal: 10.0-11.0 g/dL

Methoxy polyethylene glycol-epoetin beta Dosing:

Doses are based on estimated dry weight and rounded to the following steps:

| Step | Dose |
|------|--|
| 1 | 30 mcg every <i>four</i> weeks |
| 2 | 50 mcg every <i>four</i> weeks |
| 3 | 30 mcg every two weeks |
| 4 | 50 mcg every two weeks |
| 5 | 60 mcg every two weeks (30 mcg + 30 mcg) |
| 6 | 75 mcg every two weeks |
| 7 | 100 mcg every two weeks |
| 8 | 150 mcg every two weeks |
| 9 | 200 mcg every two weeks |

Table 1

1. Methoxy polyethylene glycol-epoetin (Mircera®) will be increased and decreased in 1-step or 2-step increments, based on scale above.
2. Mircera® will be administered IV to in-center hemodialysis patients, and SQ to home dialysis patients.
3. Mircera® ceiling is 200 mcg every two weeks (or 3.0 mcg/kg every 2 weeks, whichever is lower). Orders above 200mcg every two weeks require facility medical director or CMO approval.
4. For in-center hemodialysis patients, if pre-dialysis systolic blood pressure is >190 mm Hg, do not administer Mircera® at the beginning of treatment. If systolic blood pressure falls to <190 mm Hg during hemodialysis, administer Mircera® during treatment. If Mircera® is held for the entire hemodialysis session due to persistent systolic blood pressure >190 mm Hg, notify nephrologist and reassess for administration of Mircera® dose at next hemodialysis session.

Initiating Mircera® for new patients or ESA naïve patients

For new patients or established patients who have not received an ESA within the last 3 months, initiate as follows:

1. Iron repletion per iron standing orders
2. AND

Patient Name _____ **NKC#** _____

- a. If Hgb < 10 g/dL, then start Mircera® at 0.6 mcg/kg every 2 weeks, and round down to closest step per Table 1 but no less than 30 mcg every 2 weeks (Step 3).
- b. If Hgb 10.0-10.4 g/dL, then start Mircera® at 30 mcg every 2 weeks (Step 3).
- c. If Hgb >= 10.5 g/dL, then do not start Mircera® until Hgb falls to <10.5 g/dL

Mircera® Dosing Adjustment

1. Titrate Mircera® per the following table for patients who have a Mircera® order and had not been changed in the last 4 weeks:

| Mircera® Dosing Adjustment | |
|---|---|
| Hgb decreased by greater than or equal to 0.5 g/dL since last dose change | |
| Current Hgb (g/dL) | Step Dose Change |
| Less than 10 | 2 step dose increase |
| 10.0-10.9 | 1 step dose increase |
| 11-11.9 | No Change |
| Hgb increased/decreased by less than 0.5 g/dL since last dose change | |
| Current Hgb (g/dL) | Step Dose Change |
| Less than 9.5 | 2 step dose increase |
| 9.5-9.9 | 1 step dose increase |
| 10.0-10.4 | If Hgb decreased, do 1 step dose increase. If Hgb increased or stayed the same do NOT change |
| 10.5-11.4 | No change |
| 11.5-11.9 | 1 step dose decrease; if patient is on Step 1, do not HOLD |
| Hgb increased greater than or equal to 0.5 g/dL since last dose change | |
| Current Hgb (g/dL) | Step Dose Change |
| Less than 10 | 1 step dose increase |
| 10-10.4 | No Change |
| 10.5-11.9 | 1 step decrease; if patient is on Step 1, do not HOLD |
| Current Hgb (g/dL) | Dose Change |
| Greater than or equal to 12 g/dL | Hold Mircera; check Hgb at next redraw for home dialysis patients, and every week for in-center patients. |
| If Hgb is increased or decreased at least 1.0 g/dL since the last Hgb level; recheck Hgb at next dialysis treatment for in-center HD and at next redraw for home patients. Follow the algorithm based on the results of the recheck, e.g., if the value remains the same as the first draw, then follow the algorithm for no change. If redraw indicates a further drop by 1.0 g/dL or greater, contact nephrologist for orders. | |

Table 2

2. Do not change Mircera® dose more frequently than every 4 weeks EXCEPT:
 - a. If Hgb falls from above 10 g/dL to less than 10 g/dL, increase dose after 2 weeks.
 - b. If Hgb is already less than 10 g/dL and drops greater than 0.5 g/dL, increase dose after 2 weeks.

Patient Name _____ **NKC#** _____

- c. If Hgb \geq 12 g/dL, hold Mircera® and check Hgb every week for in- center patients, and at next redraw for home dialysis patients. Resume Mircera® with 1-step decrease from previous dose as soon as Hgb is $<$ 11.8 g/dL and last dose was administered 2 weeks ago or more. If Hgb remains \geq 12 g/dL for more than 2 months, return to regular Hgb testing policy.
- 3. Post hospitalization: check Hgb at the first treatment after hospitalization and pre-hospitalization dose will be administered if the patient is due for Mircera. Titrate Mircera as needed per Table 2 once Hgb results are received.

Conversion from Retacrit® or EpoGen® to Mircera®

1. When a patient with an Retacrit® or EpoGen® order switches to Mircera®, discontinue erythropoietin order.
2. Convert Retacrit® or EpoGen® to appropriate dose of Mircera®, per conversion dose chart below. Convert to Mircera® when the next ESA dose is due.
3. If ESA is on HOLD from another protocol, wait until Hgb is less than 11.8g/dl, then convert ESA as follows: See Table 3 to convert previous ESA dosing to Mircera® Step, then see Table 1 and decrease 1 Step.

Epoetin alfa (Retacrit or EpoGen) to Methoxy Polyethylene Glycol Epoetin-beta (Mircera) Conversion Dose Chart

| Retacrit or EpoGen Dose (U) per week - total | Mircera® Dose | |
|--|---------------|---------------|
| | Dose (mcg) | Frequency |
| < 2000 | 30 | Every 4 weeks |
| 2000 - < 3000 | 50 | Every 4 weeks |
| 3000 - < 5000 | 30 | Every 2 weeks |
| 5000 - < 8000 | 50 | Every 2 weeks |
| 8000 - < 11,000 | 60 | Every 2 weeks |
| 11,000 - < 18,000 | 75 | Every 2 weeks |
| 18,000 - < 27,000 | 100 | Every 2 weeks |
| 27,000 - < 42,000 | 150 | Every 2 weeks |
| \geq 42,000 | 200 | Every 2 weeks |

Table 3

Labs: Draw CBC per routine lab orders.

Matthew Rivara, MD

Physician Name (Please Print)

Matthew

January 5th, 2026

Physician Signature
(see **Initial Orders**)

Date

Patient Name _____ **NKC#** _____

Chronic Maintenance In-Center Hemodialysis Standing Orders – On Dialysis Protein Supplements (ODPS)

ICD-10 Code:

E88.09 Other disorders of plasma-protein metabolism, not elsewhere classified
Primary Supplement: Hydrolyzed Protein 1 fluid ounce
Secondary Supplement: High protein, high calorie (1) 8 fluid ounce can

Criteria to Start ODPS:

1. NKC patient whose albumin is ≤ 3.5 g/dL
2. Dietitian assesses that it is appropriate to start ODPS.

Dosing:

1. If each patient meets criteria to start ODPS, give protein supplement PO each dialysis.
2. Continue the supplement until deemed appropriate by dietitian to discontinue

Exclusion Criteria:

1. Patients that have swallowing difficulties
2. Patients with food allergies to ingredients in supplements
3. Patients with religious dietary exclusions
4. Patients who decline supplement

Matthew Rivara, MD

Physician Name (Please Print)



January 5th, 2026

Physician Signature

(see **Initial Orders**)

Date

Patient Name _____ NKC# _____

Chronic Maintenance In-Center Standing Orders - Paricalcitol

Paricalcitol (ICD10 – N25.81)

1. Targets iPTH 150 – 600 pg/ml
 Calcium \leq 10.2 mg/dl

2. Labs:

- Draw monthly calcium (in NKC Profile) unless otherwise indicated by tables below.
- Draw iPTH quarterly (Jan-Apr-Jul-Oct) unless otherwise indicated below.
- Draw labs with the routine monthly lab draws unless otherwise indicated by tables below.
- If monthly calcium >10.2 , redraw calcium in 1 week (maximum 3 draws per month).
- If calcium >10.5 , notify physician for guidance on management.

3. Dosing:

- Paricalcitol dosing is based on tiers that correspond to specific doses in mcg as indicated in Table 1:

Table 1: Tier Dosing

| Tier | Dose, mcg | Tier | Dose, mcg |
|------|-----------|------|----------------|
| 0 | 0 | 6 | 6 |
| 1 | 1 | 7 | 8 |
| 2 | 2 | 8 | 10 |
| 3 | 3 | 9 | 12 |
| 4 | 4 | 10 | 14 |
| 5 | 5 | >10 | Call physician |

- Give paricalcitol doses IV, 3x/week with dialysis. If patient dialyzes >3 x/week, ensure doses are spaced evenly 3x/week throughout the week. If patient runs only 1 or 2 times per week administer the dose with each dialysis i.e. qweek or 2x/week, respectively.
- Always use the most recent calcium and iPTH when applying the algorithms.
- If the algorithm indicates to decrease the paricalcitol dose to <1 mcg, hold paricalcitol dose

4. Incident Patient Algorithm:

- Incident patient = patient new to dialysis or established patient who has not received any doxercalciferol or paricalcitol within past 6 months.
- Do not start paricalcitol if calcium >9.8 , monitor calcium monthly

Patient Name _____ NKC # _____

c. If calcium is ≤ 9.8 give paricalcitol at the dose indicated in Table 2 and draw next iPTH in two months, or at next quarterly labs, whichever is sooner.

| Table 2: Incident Patient Paricalcitol Dosing | | |
|---|------|------------|
| iPTH (pg/ml) | Tier | Dose (mcg) |
| <300 | 0 | 0 |
| 300 – 450 | 1 | 1 |
| >450 – 600 | 2 | 2 |
| >600 | 4 | 4 |

d. Once paricalcitol started and result on next iPTH draw known, proceed per Established Patient Algorithm below.

5. Established Patient Algorithm

- If calcium ≥ 10.2 mg/dl, hold paricalcitol dose
- If calcium < 10.2 mg/dl, determine paricalcitol dose using the iPTH brackets in Table 3 and the following algorithm.

| Table 3: Established Patient PTH Brackets | |
|---|---------|
| iPTH (pg/ml) | Bracket |
| < 150 | A |
| 150 – 450 | B |
| >450 – 600 | C |
| >600 | D |

- Change current paricalcitol dose based on most recent PTH result compared to the prior PTH result:
 - Hold dose if PTH is in bracket (A)
 - 1-tier increase if patient switched from PTH bracket (B) to bracket (C) or from bracket (C) to bracket (D) or patient remains in bracket (D)
 - 2-tier increase if patient had two or more PTH bracket increase
 - 1-tier decrease if patient switched from PTH bracket (D) to bracket (C) or from bracket (C) to bracket (B)
 - 2-tier decrease if patient had two or more bracket decrease, unless patient switches to bracket (A), in which case hold dose
 - In all other cases keep existing dose

6. Held Dose Algorithm (for established patients)

- If paricalcitol dose on hold, and most recent calcium < 10.0 mg/dl AND iPTH > 300 pg/ml, then manage paricalcitol using the following algorithm:

Patient Name _____ NKC # _____

i. Restart with 2-tier decrease if iPTH >300 pg/mL and in bracket (B)
(i.e. iPTH >300 to 450)

ii. Restart with 1-tier decrease if in bracket (C). If previous dose was
1mcg, restart paricalcitol at 1mcg (Tier 1) if in bracket (C).

iii. Restart with the same dose if in bracket (D)

b. If paricalcitol on hold, and most recent calcium is ≥ 10.0 mg/dl AND iPTH
>600 pg/ml, contact nephrologist to suggest starting or increasing cinacalcet

Matthew Rivara, MD

Physician Name (Please Print)



January 5th, 2026

Physician Signature

(see **Initial Orders**)

Date

Patient Name _____ NKC # _____