

MEDICATIONS COMMONLY USED IN DIALYSIS

Dialysis patients require many medications. Several of these medications are administered in conjunction with the dialysis treatment. However, there are also a significant number of medications that are self-administered at home. These medications include those required to treat the many complications of kidney failure, in addition to medications that may be required to treat patients' other comorbid conditions. Caregivers should be aware of the high number of medications taken by chronic dialysis patients because this high "pill burden" can contribute to medication burnout and nonadherence to the medication orders. When medications do not seem to be having the desired therapeutic effect, it may not always be related to inadequate ordered medication dose, it may be because the patient isn't taking the medications as ordered. Patient support and education can play an important role in improving medication adherence.

Many medications are removed during a dialysis treatment. Small molecular weight drugs are easily dialyzed away. Drugs with a high volume of distribution and those that are highly protein-bound are poorly dialyzable. It is helpful to understand that medications that are more readily removed will require adjustment of dosing or timing of the dose to maximize the therapeutic effect, e.g. many antibiotics are administered in the final hour or even after dialysis to ensure they are not removed during the treatment.

- All medications given in the dialysis setting must be drawn up and administered one patient at a time.
- All medications must be scanned prior to administration.

Acetaminophen (Tylenol)

- Description: Non-narcotic Analgesic, antipyretic
- Indication: pain, fever
- Common Dosing: 500-1000 mg orally
- Critical Considerations: Max daily dose 3000 mg 24 hours. Assess patient home use prior to giving.

Alteplase (Cathflo Activase)

- Description: Central line de clotting agent: aka thrombolytic
- Indication: non-functioning Central Vein Catheter (CVC)
- Common Dosing: 2 mg/lumen, allow to dwell 60 minutes before withdrawn. Repeat as directed by Provider.
- Critical Considerations: Initiates fibrinolysis cascade with limited systemic affect. Reconstitute each vial with 2.2 ml Sterile Water for injection only, DO NOT SHAKE.

Darbepoetin Alfa (Aranesp)

- Description: Erythropoietin-stimulating agent (ESA)
- Indication: anemia
- Common Dosing: as prescribed; titrated per protocol to a maximum dose 240 mcg intravenous (IV) weekly
- Critical Considerations: Anemia management based on twice monthly hemoglobin/hematocrit (H/H). Labs must be drawn as ordered. Should be held for uncontrolled hypertension. May worsen existing hypertension. If patient blood pressure (BP) above range, notify anemia manager and provider to determine if dose should be held.

MEDICATIONS COMMONLY USED IN DIALYSIS

Calcitriol (Calcijex (IV), Rocaltrol (oral))

- Description: Active form of Vitamin D.
- Indication: hypocalcemia, renal osteodystrophy, secondary hyperparathyroidism
- Common Dosing: 1-2 mcg IV Injected into dialysis circuit as ordered or 0.25-2 mcg orally as prescribed depending on indication and patient response.
- Critical Considerations: Hold if Phosphorus is greater than 7 or the adjusted Ca is > 10.2. Calcijex comes in glass ampules, draw dose with caution. Ampules with unused medication are disposed of in the appropriate medication disposal container (not the trash).

Calcium Carbonate (Tums) – Phosphorus binder

- Description: Calcium-based phosphorus binder
- Indication: Hyperphosphatemia
- Common Dosing: Titrated to phosphorous level and meal composition. 500 mg, 750 mg, 1000 mg
- Critical Considerations: Patients must take with meals. If dose taken between meals, the medication will act as a Calcium supplement. Contraindicated when serum calcium is >10.2 mg/dl.

Calcium Carbonate (Tums) – Calcium supplement

- Description: Calcium supplement
- Indication: Hypocalcemia
- Common Dosing: Based on lab results. 500 mg, 750 mg, 1000 mg.
- Critical Considerations: Must be taken separate from food to support calcium levels. If dose is taken with meals it will act as a phosphorus binder; **take between meals.**

CeFAZolin (Ancef)

- Description: Antibiotic
- Indication: infection
- Common Dosing: IV as ordered or per recurring order, intraperitoneal (IP) as ordered
- Critical Considerations: easily dialyzed. Administer IV over 10 minutes at the end of dialysis or through peritoneal dialysate per Provider orders

Ceftazidime (Tazicef)

- Description: Antibiotic
- Indication: infection
- Common Dosing: 1-2 gm IV as ordered
- Critical Considerations: easily dialyzed. Administer IV over 15-30 minutes at the end of dialysis per Provider orders

Cinacalcet (Sensipar)

- Description: Calcimimetic
- Indication: Secondary hyperparathyroidism
- Common Dosing: 30, 60, 90, 120 mg orally as ordered, taken one time per day by patient
- Critical Considerations: **causes hypocalcemia.** commonly causes gastrointestinal (GI) disturbance. If patient reports this side effect, report to provider and dietitian for potential switch to Parsabiv. If multiple dose increases do not achieve therapeutic result, discuss medication adherence and potential switch to Parsabiv. Dialysis units typically assist patients in

MEDICATIONS COMMONLY USED IN DIALYSIS

obtaining this medication (Intermountain Pharmacies). Notify the clinic coordinator when patient requests refills.

CloNIDine (Catapres)

- Description: Anti-hypertensive
- Indication: Hypertension
- Common Dosing: 0.1 mg as ordered or per recurring order
- Critical Considerations: PRN order should include specific BP parameters (e.g. SBP > 180, DBP > 110). Do not administer if HR < 55 BPM.

Dextrose 50% (D50)

- Description: Concentrated Glucose
- Indication: Hypoglycemia
- Common Dosing: 25 ml or 50 ml IV push over three minutes
- Critical Considerations: Follow [Dialysis Hypoglycemia Guideline](#). Blood Glucose (BG) < 70 and patient unable to take oral glucose administer 25 ml, BG < 40 and patient unable to take oral glucose administer 50 ml. Repeat BG after 15 minutes and repeat dose in accordance with guideline. Notify provider if BG doesn't improve.

Diphenhydramine (Benadryl)

- Description: Antihistamine
- Indication: Itching, prophylactically prior to blood product administration if ordered
- Common Dosing: 25 mg - 50 mg
- Critical Considerations: oral or IV as ordered

Etelcalcitide (Parsabiv)

- Description: Calcimimetic
- Indication: Secondary Hyperparathyroidism
- Common Dosing: 2.5 and 5 mg IV
- Critical Considerations: Must remain refrigerated and cannot be exposed to light; do not draw up ahead of time. Must be administered during or after rinse back. Best practice includes administering into the arterial needle post dialysis then flushing with 10 ml NS to ensure patient receives entire dose.

Glucose Tablets

- Description: Concentrated glucose
- Indication: Hypoglycemia
- Common Dosing: 16 gm (4 x 4 gm chewable tablets)
- Critical Considerations: Follow [Dialysis Hypoglycemia Guideline](#). Blood Glucose (BG) <70 and patient able to take oral glucose. Repeat BG after 15 minutes and repeat dose in accordance with guideline. Notify provider if BG doesn't improve.

MEDICATIONS COMMONLY USED IN DIALYSIS

Heparin

- Description: Anticoagulant
- Indication: Extracorporeal anticoagulation during dialysis treatment
- Common Dosing: IV administration via hemodialysis machine
- Critical Considerations: Do not administer if patient has Heparin Induced Thrombocytopenia (HIT) or thrombocytopenia, reports a recent fall or has unexplained bruising, frequent nose bleeds, blood in eye, or other evidence of bleeding including menses. Additionally, hold Heparin prior to a planned surgical procedure, e.g. eye surgery, catheter removal, or other procedures scheduled within 24 hours of the dialysis treatment. Notify provider if prolonged bleeding episodes are identified at the end of treatment to see if heparin should be reduced. Heparin not immediately administered must be labeled, secured appropriately, and connected to the dialysis circuit within one hour of being drawn up. Vials and syringes with unused medication are disposed of in the appropriate medication disposal container (not the trash).

Iron Sucrose (Venofer)

- Description: Iron supplement
- Indication: Iron Deficiency Anemia
- Common Dosing: 50 and 100 mg vials. Can be ordered in a course of ten doses in consecutive treatments or as a weekly maintenance schedule
- Critical Considerations: Slow push over two to five minutes. Administer early in the dialysis treatment and observe for reactions. May cause nausea/vomiting (N/V). Contact provider to discuss holding the dose if patient has an active infection. Do not administer Venofer if Ferritin > 800 ng/ml, Transferrin Saturation (tSat) > 30%, Hgb >12 g/dl. Vials with unused medication are disposed of in the appropriate medication disposal container (not the trash).

LiquaCel

- Description: Amino Acid Liquid Protein
- Indication: Inadequate protein intake, Hypoalbuminemia
- Common Dosing: 30 mL orally as recommended by the Dietitian and ordered by provider
- Critical Considerations: Ordered as a Special Order in iCentra. Document in the Activities of Daily Living: Nutrition/ADL section in iCentra (not charted as a medication in iCentra)

Loperamide Hydrochloride (Imodium)

- Description: Anti-diarrheal
- Indication: diarrhea
- Common Dosing: 4 mg orally PRN. Refer to Recurring Order
- Critical Considerations: Max daily dose 16 mg in 24 hours. Assess patient home use prior to giving.

Midodrine (ProAmatine)

- Description: Vasopressor
- Indication: Hypotension
- Common Dosing: 5 mg orally
- Critical Considerations: PRN Midodrine order must include a SBP parameter; not just "hypotension."

MEDICATIONS COMMONLY USED IN DIALYSIS

Nitroglycerin (NTG)

- Description: Nitrate, Vasodilator
- Indication: Chest pain
- Common Dosing: 0.4 mg sublingual tablet; as ordered by provider
- Critical Considerations: Monitor for hypotension, must always notify provider

Ondansetron (Zofran)

- Description: Antiemetic
- Indication: N/V
- Common Dosing: 4 mg Sublingual or 4 mg IV as ordered
- Critical Considerations: refer to recurring outpatient dialysis order

Paracalcitol (Zemlar)

- Description: Active form of Vitamin D.
- Indication: Secondary hyperparathyroidism
- Common Dosing: 2 mcg/ml or 5 mcg/ml IV
- Critical Considerations: Hold if Phosphorus is greater than 7 or the adjusted Ca is > 10.2. Never use as a multi-use vial. Vials with unused medication are disposed of in the Black Hazardous Medication waste container.

Patiromer (Veltassa)

- Description: Potassium binder
- Indication: Hyperkalemia
- Common Dosing: 8.4 gm orally once daily, may be used two days in a row as ordered.
- Critical Considerations: May be prescribed when a patient has or will miss a scheduled dialysis treatment to diminish chance of critical hyperkalemia. May bind to other oral medications and should be taken three hours after and three hours before other medications. Must be refrigerated.

Sodium Citrate 4%

- Description: Anticoagulant with potential antimicrobial benefits
- Indication: Used to pack Central line lumens after dialysis treatment
- Common Dosing: 3 ml per lumen
- Critical Considerations: Potential “look-alike” medication, in same size syringe as pharmacy provided pre-drawn heparin.

Sodium Polystyrene (Kayexalate)

- Description: Potassium binder
- Indication: Hyperkalemia
- Common Dosing: 15 gm orally daily as ordered
- Critical Considerations: May be prescribed when a patient has or will miss a scheduled dialysis treatment to diminish chance of critical hyperkalemia. May bind to other oral medications and should be taken three hours after and three hours before other medications.

MEDICATIONS COMMONLY USED IN DIALYSIS

Sodium Thiosulfate (STS)

- Description: Calcium chelating agent
- Indication: Calciphylaxis in ESRD patients. Reduces blood vessel calcification
- Common Dosing: 25 gm three times per week, with dialysis treatment
- Critical Considerations: Call pharmacy to mix dose as soon as patient arrives. Administer last 30 minutes of treatment. Administer any ordered antibiotics after STS. If GI disturbances occur, notify provider as dose reduction may be appropriate.

Sodium Zirconium Cyclosilicate (Lokelma)

- Description: Potassium binder
- Indication: Hyperkalemia
- Common Dosing: 5-10 gm orally once daily as ordered
- Critical Considerations: Max daily dose 15 gm in 24 hours. May be prescribed when a patient has or will miss a scheduled dialysis treatment to diminish chance of critical hyperkalemia. Lokelma contains 400 mg sodium per 5 gm dose and may contribute to increased edema or fluid overload. May bind to other oral medications and should be taken three hours after and three hours before other medications.

Vancomycin (Vancocin)

- Description: Antibiotic
- Indication: Infection
- Common Dosing: 1 gm IV or IP as ordered
- Critical Considerations: Must be administered at the end of treatment over at least an hour to avoid "red man" syndrome. If trough level is ordered send sample STAT, dose is determined based on trough result. May use in peritoneal dialysate per Provider orders. Vials with unused medication are disposed of in the appropriate medication disposal container (not the trash).

Common Vaccines and other agents

Influenza Vaccine (Fluzone High Dose)

- Description: Vaccine
- Indication: Annual influenza prophylaxis
- Common Dosing: One dose, 0.5 ml pre-filled syringe. Offered to all patients annually
- Critical Considerations: Federal law requires that the most recent Vaccination Information Sheet must be given to patient before administration.

Hepatitis B Vaccine (Engerix-B or Recombivax)

- Description: Hepatitis B Vaccine
- Indication: Hepatitis B prophylaxis
- Common Dosing: Three (Recombivax) or four (Engerix-B) 1 ml doses (20 mcg) intramuscular (IM).
- Critical Considerations: Always administer the Hepatitis vaccine after monthly lab draw. If administered within one week of a Hepatitis Antigen test, it will create a false positive result leading to inappropriate patient isolation until infection is ruled out. If patient does not

MEDICATIONS COMMONLY USED IN DIALYSIS

seroconvert, repeat the series in accordance with the [Infection Control Dialysis Center Procedure](#). Federal law requires that the most recent Vaccination Information Sheet must be given to patient before administration.

Pneumococcal Vaccine (Pneumococcal Conjugate Vaccine 13 (PCV13), Prevnar13, Pneumococcal Polysaccharide Vaccine 23 (PPSV23) Pneumovax23)

- Description: Pneumonia Vaccine
- Indication: Viral Pneumonia prophylaxis
- Common Dosing: 0.5 ml IM pre-filled syringe. Two common formulations include Pneumococcal Conjugate Vaccine 13 (PCV13) and Pneumococcal Polysaccharide Vaccine 23 (PPSV23).
- Critical Considerations: ESRD patients' vaccination schedule differs from general population dosing. Vaccination with both PCV13 and PPSV23 at designated intervals required to achieve greatest prophylactic effect. Refer to [Hemodialysis/Peritoneal Dialysis Pneumococcal Vaccination Procedure Adult Pediatric](#) which follow the [CDC guidelines](#). Federal law requires that the most recent Vaccination Information Sheet must be given to patient before administration.

Tuberculin Purified Protein Derivative (PPD) (Tubersol)

- Description: Test for Tuberculosis
- Indication: TB surveillance process.
- Common Dosing: 0.1 ml Intradermal injection
- Critical Considerations: Assess wheal between 48-72 hours after dose and record result. Follow [Dialysis TB Surveillance Protocol](#).

Additional Resources

- CDC Link
- Highlighted links

Creation Date: 7/28/2020

Subsequent Revisions:

Name and Title of Author of Last Revision: Chenlee Condie

Custodian: Elizabeth Roland

Approved By: Ray Morales