

Diuretics, Antihypertensives, and Anticoagulants

Diuretic Therapy Table

Diuretic Therapy	Thiazide	Loop	Osmotic	Carbonic-anhydrase inhibitor	Potassium Sparing
Common Medications	Hydrochlorothiazide (HCTZ) Metolazone (Zaroxolyn®)	Furosemide (Lasix®) Bumetanide (Bumex®)	Mannitol	Acetazolamide (Diamox®)	Spironolactone (aldactone)
Effects on K+	Depletes	Depletes	Depletes	Depletes	Retains
Labs	Electrolytes (especially K+) BUN, Creat Blood Glucose Lipids	Electrolytes (especially K+) BUN, Creat Blood Glucose Lipids	Electrolytes (especially K+) Arterial Blood Gas (ABG)	Electrolytes (especially K+) Arterial Blood Gas (ABG)	K+ (potassium)
Contraindications	Renal Failure	Renal Failure			Decreased renal function
Drug Interactions	Digoxin toxicity with hypokalemia Lithium Caution with antihypertensives	Digoxin toxicity with hypokalemia Lithium Caution with antihypertensives Aminoglycosides Anticoagulants			Ace Inhibitors (K+ retention)

Basic Nursing Care

- Daily Weights – home and acute setting
- I & O – acute setting
 - Expect rapid fluid and electrolyte shifts when using osmotic or carbonic-anhydrase inhibitors which can lead to pulmonary edema, fluid volume depletion, acid base imbalance

- Vitals signs – acute setting, may be appropriate in the home setting
 - Warn - Orthostatic hypotension: Teach changing positions slowly
 - Significant hypotension potential when using osmotic or carbonic-anhydrase inhibitors
 - Potential for cardiac dysrhythmias when using osmotic or carbonic-anhydrase inhibitors
- Teach assess for signs/symptoms of electrolyte imbalance
- Monitor labs
 - Is there a correlation related to K+, anticoagulant use, or compromised renal health
 - Is the patient a diabetic or having signs of increased blood glucose or lipid levels
 - Is the patient exhibiting signs of hyperlipidemia
- Teach patients to avoid K+ supplements when taking potassium sparing diuretics, what foods are high in K+
- Avoid late evening administration
- Obtain clinical and medication history
 - Look for indications of potential drug interactions and indications of overall health history for guidance in facilitating appropriate nursing care

Antihypertensive Therapy Table

Type of Antihypertensive Agent	Side Effects	Nursing Interventions
Diuretics <ul style="list-style-type: none"> • Thiazides & Loops) 	Renal Impairment Fluid Volume Deficit Hypotension	See Diuretic Therapy Table
Beta-Blockers <ul style="list-style-type: none"> • “lol” <ul style="list-style-type: none"> ○ Metoprolol ○ Atenolol 	Severe bradycardia, hypotension Hyper or hypoglycemia Warning for Nonselective beta blockers with obstructive pulmonary disease Sexual dysfunction	Teach – Do not stop abruptly Monitor vitals Teach – orthostatic hypotension Question physician when using with COPD Teach patient to report sx of decreased sex drive Teach IDDM patients to monitor for hypoglycemia

<p>Alpha₂ Agonist</p> <ul style="list-style-type: none"> • Clonidine • Aldomet® 	<p>↓ liver function Na⁺ & H₂O retention Dry mouth Bradycardia</p>	<p>Teach – Do not stop abruptly Monitor for fluid retention Monitor vitals Teach – orthostatic hypotension Teach hard candies/lozenges aid in dry mouth</p>
<p>Alpha Adrenergic Blockers</p> <ul style="list-style-type: none"> • Prazosin • Terazosin 	<p>Vasodilation = hypotension Sodium & water retention</p>	<p>Teach – Do not stop abruptly Monitor vitals Teach – orthostatic hypotension Alcohol increases hypotensive effect Use cautiously with other vasodilators Monitor for fluid retention</p>
<p>Adrenergic Neuron Blockers (peripherally acting)</p> <ul style="list-style-type: none"> • Guanadrel Sulfate (Hylorel) • Reserpine (Serpasil) 	<p>Orthostatic hypotension & hypotension Reserpine can induce nightmares and suicidal tendencies Na⁺ & H₂O retention (may need diuretic added)</p>	<p>Teach – Do not stop abruptly Monitor vitals Teach – orthostatic hypotension Monitor Na⁺ levels Monitor for fluid retention</p>
<p>Alpha₁ and Beta₁ Adrenergic Receptor Blockers</p> <ul style="list-style-type: none"> • Labetalol (Normodyne) • Carvedilol (Coreg) 	<p>Hypotension Bradycardia with high dosing GI disturbance Sodium & water retention</p>	<p>Teach – Do not stop abruptly Monitor vitals Teach – orthostatic hypotension Monitor for fluid retention Ask patient to report GI upset</p>
<p>Direct-acting Arteriolar Vasodilators - Potent</p> <ul style="list-style-type: none"> • Nitroprusside & Diazoxide (Hypertensive emergencies) • Hydralazine & monoxidil (Moderate hypertension) 	<p>Reflex tachycardia Palpitations Restlessness, Agitation, Confusion Hyperglycemia with diazoxide (inhibits insulin release)</p>	<p>Teach – Do not stop abruptly Monitor vitals Teach – orthostatic hypotension Ask patient to report sx of mood swings or behavior changes</p>

<p>Angiotensin-Converting Enzyme (ACE) Inhibitors</p> <ul style="list-style-type: none"> • “Prils” <ul style="list-style-type: none"> ○ Enalapril ○ Lisinopril ○ captopril 	<p>Contraindicated in pregnancy Caution with potassium sparing diuretics salt Hypotension Irritating cough</p>	<p>Teach – Do not stop abruptly Monitor vitals Teach – orthostatic hypotension Monitor for excess sources of K+ Teach patient to report occurrence of chronic cough</p>
<p>Angiotensin II Receptor Blockers (ARB)</p> <ul style="list-style-type: none"> • “Sartan” <ul style="list-style-type: none"> ○ Losarten (Cozaar®) 	<p>Contraindicated in pregnancy Hypotension</p>	<p>Teach – Do not stop abruptly Monitor vitals Teach – orthostatic hypotension</p>
<p>Calcium Blockers</p> <ul style="list-style-type: none"> ○ Diltiazem ○ Verapamil ○ Procardia 	<p>Hypotension & Bradycardia Potentiates peripheral edema</p>	<p>Teach – Do not stop abruptly Monitor vitals Teach – orthostatic hypotension Avoid ingestion of grapefruit juice – can intensify drug effect Monitor for peripheral edema</p>

Anticoagulants Therapy Table

Anticoagulants	Use	Administration	Lab	Side Effects	Nursing Interventions
Unfractionated Heparin (UFH) <ul style="list-style-type: none"> Heparin <i>Antidote = Protamine Sulfate</i>	Prevention of Thrombosis DVT AMI Pulmonary Embolism CVA (non-hemorrhagic) Intravenous Flush (low dose, to maintain port/line access)	IV or SQ <i>SQ – only abdomen rotating area</i>	Guiac Stool PTT & APTT Before & during therapy	Easy Bruising, Bleeding, hemorrhage HIT (heparin induced thrombocytopenia)	Follow protocol for dose adjustment based on lab results Monitor and teach patient to report sx of bleeding Assess for bleeding risk in health history High Risk med = 2 RN verify
Low-molecular-weight heparin (LMWH) <ul style="list-style-type: none"> Lovenox 	Prevention of Thrombosis DVT AMI Pulmonary Embolism CVA (non-hemorrhagic)	SQ <i>SQ only abdomen rotating area</i>	All bleeding times before and periodically during therapy	Easy Bruising, Bleeding, hemorrhage	Monitor and teach patient to report sx of bleeding Assess hx for bleeding risk If home injection – teach administration
Warfarin (Coumadin) <i>Antidote = Vitamin K</i>	Prevention of Thrombosis Long Term or lifelong Therapy A-Fib A-Flutter DVT – long term Pulmonary Embolism Mechanical Valve	PO	PT & INR INR – 2-3 <i>If mechanical valve – 2-3.5</i> Before and periodically during therapy	Easy Bruising, Bleeding, hemorrhage	Follow protocol for dose adjustment based on lab results Assess hx for bleeding risk Assess fall risk Monitor and teach patient to report sx of bleeding Teach patient to avoid foods high in vitamin K Teach patient to report new medications to care providers

<p>Antiplatelets</p> <ul style="list-style-type: none"> • ASA • Plavix • Ticlid 	<p>Decrease platelet aggregation (clumping)</p> <p>TIA CVA Coronary Artery Disease</p>	<p>PO</p>	<p>Platelets</p>	<p>Easy Bruising, Bleeding</p>	<p>Assess Hx for bleeding risk Monitor and teach patient to report sx of bleeding With ASA report sx of tinnitus</p>
<p>Glycoprotein IIb/IIIa Inhibitors (antiplatelet) I</p> <ul style="list-style-type: none"> • Integilin® • ReoPro® 	<p>Decrease platelet aggregation (clumping)</p> <p>Unstable Angina</p>	<p>IV</p>	<p>All bleeding times before and periodically during therapy Guic stool prior to initiation</p>	<p>Bleeding / hemorrhage</p>	<p>Assure protocols precisely followed Assure inclusion & exclusion criteria completed prior to initiating Monitor for Sx of bleeding Obtain all indwelling lines prior to initiating</p> <p>High Risk med = 2 RN verify</p>
<p>Fibrinolytics / Thrombolytics</p> <ul style="list-style-type: none"> • Tissue plasminogen activator (TPA) • Tenecteplase (TNK) 	<p>Lyses or dissolves thrombi</p> <p>Acute MI Acute CVA (only TPA)</p>	<p>IV</p> <p><i>No needle sticks after therapy initiated</i></p>	<p>All bleeding times before and periodically during therapy Guic stool prior to initiation</p>	<p>Bleeding / Sudden severe hemorrhage</p>	<p>Assure inclusion & exclusion criteria completed prior to initiating Monitor for Sx of bleeding Obtain all indwelling lines prior to initiating Assure protocols precisely followed</p> <p>High Risk med = 2 RN verify</p>

Important Medications:

- Cardiac glycosides: digoxin/digitalis
- Nitrates/Nitroglycerin
- Antiarrhythmics/amiodarone
- Diuretics/thiazides, Lasix
- Antihypertensives/beta blockers, calcium channel blockers, angiotensin-converting enzyme inhibitors, angiotensin II receptor blockers
- Anticoagulants/heparin, low-molecular weight heparins, coumadin, antiplatelets, thrombolytics
- Antihyperlipidemias/statin: clopidogrel
- Pentoxifylline