

| Anticoagulant Agents | | |
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| Category | Medication Information | |
| Common Drugs | <i>Generic Name</i> | <i>Brand Name</i> |
| | Warfarin | Coumadin |
| | Clopidogrel | Plavix |
| Recommended by Cardiac Rehab Specialist | Aspirin, Effient | |
| Treatment | Thromboembolic Conditions 1. Myocardial infarction 2. Rheumatic heart disease 3. Cerebrovascular disease | |
| Mechanism | Heparin inactivates thrombin and therefore prevents conversion of fibrinogen to fibrin. Coumadin inhibits synthesis of the vitamin K-dependent clotting factors. | |
| Adaptation for Exercise Prescription | Does not seem to interfere with graded exercise testing. | |

| Anti-Anxiety Agents | | |
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| Category | Medication Information | |
| Common Drugs | <i>Generic Name</i> | <i>Brand Name</i> |
| | Diazepam | Valium |
| Recommended by Cardiac Rehab Specialist | Alprazolam | |
| Treatment | Prescribe anti-anxiety agent. | |
| Mechanism | Varies. | |
| Effect at Rest | Mild hypertension, no significant effects on hemodynamics or ECG finding, with exception of possible lowering of HR and BP. | |
| Effect During Exercise | No effect on exercise capacity. | |

| Anti-Lipidemic Agents | | |
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| Category | Medication Information | |
| Common Drugs | <i>Generic Name</i> | <i>Brand Name</i> |
| | Nicotinic Acid | Niaspan |
| | Gemfibrozil | Lopid |
| | Atorvastatin | Lipitor |
| | Fluvastatin | Lescol |
| | Lovastatin | Mevacor |
| | Pravastatin | Pravachol |
| | Simvastatin | Zocor |
| | Ezetimibe | Zetia |
| Recommended by Cardiac Rehab Specialist | Gestor | |
| Treatment | Reduction fo elevated serum lipids to reduce morbidity and mortality in atheroscleroses and coronary artery disease. | |

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| Mechanism | To reduce serum or plasma cholesterol. |
| Effect at Rest | With some exceptions, these agents have no effect on HR, BP, or ECG. |
| Effect During Exercise | These agents would not affect exercise tolerance in any direct fashion and would not intervene with graded exercise testing. |

| Anti-Arrhythmic Agents | | |
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| Category | Medication Information | |
| Common Drugs | <i>Generic Name</i> | <i>Brand Name</i> |
| | Digoxin | Lanoxin |
| | Propranolol | Inderal |
| | Amiodarone | Cordarone, Pacerone |
| Recommended by Cardiac Rehab Specialist | | |
| Treatment | To regulate cardiac rhythms. | |
| Mechanism | All anti-arrhythmics are used to normalize rhythm disturbances through diverse mechanisms. 1. Inderal: Produces beta-adrenergic receptor blockage. | |
| Effect at Rest | Reestablishes normal heart rhythm, which results in more efficient functioning, which results in reduced damage for oxygen; resting values can be varied. | |
| Effect During Exercise | By restoring a normal sinus rhythm, anti-arrhythmics improve exercise tolerance by allowing the heart to function more efficiently. Each of the classes of drugs will also modify the ECG. | |
| Adaptation for Exercise Prescription | Exercise test for purpose of exercise prescription need not be performed because these agents do not significantly affect HR, but it is recommended that these drugs be used at time of test due to their effect on cardiac rhythm. | |

| Beta-Blocking Agents | | |
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| Category | Medication Information | |
| Common Drugs | <i>Generic Name</i> | <i>Brand Name</i> |
| | Metoprolol | Lopressor |
| | Atenolol | Tenormin |
| Recommended by Cardiac Rehab Specialist | Toprol | |
| Treatment | Angina pectoris, hypertension, previous MI patients, arrhythmias, migraine headaches. | |
| Mechanism | Molecules of drug attach to beta-receptor sites of sympathetic nervous system throughout body, blocking catecholamines from attaching to sites. Some cardioselective agents act primarily on beta-2 receptors in the heart (relaxation of vascular and smooth muscle), whereas others have more agonist activity, stimulating rather than blocking receptors. (Beta-1 moderates cardiac stimulation.) Decreases heart's oxygen demands (myocardial oxygen consumption) and therefore workload by a slowing of the heart and decrease in contractility and blood pressure. May delay onset of the ischemic response. | |
| Effect at Rest | Decreased HR, BP, and arrhythmias; pindolol does not affect resting hemodynamics. | |
| Effect During Exercise | Increased exercise capacity in patients with angina, decreased exercise capacity in patients without angina, decreased exercise ischemia, decreased HR and BP; VO ₂ max not affected. | |

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| Adaptation for Exercise Prescription | Addition or withdrawal of beta-blocker to the therapeutic regimen of a patient necessitates a new graded exercise test. Relationship between %VO ₂ R and %HRR is not altered; therefore, usual methods to calculate THR for exercise prescription are still acceptable. HRmax and training HR will be lower in persons receiving beta-blockers. Use HRmax with beta-blocker therapy. |
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| Broncodilators/Antihistamines | | |
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| Category | Medication Information | |
| Common Drugs | <i>Generic Name</i> | <i>Brand Name</i> |
| | Beclomethasone | Beclovent, Ovar |
| | Budesonide | Pulmicort |
| | Albuterol | Proventil, Ventolin |
| | Montelukast | Singulair |
| Recommended by Cardiac Rehab Specialist | | |
| Treatment | Asthma, chronic obstructive pulmonary disease (COPD). | |
| Mechanism | Inhibit bronchial smooth-muscle constriction in patients with asthma or COPD. | |
| Effect at Rest | May increase HR; may produce arrhythmia; BP effect will vary. | |
| Effect During Exercise | May increase HR; may increase BP; may produce PVCs and dysrhythmias. Increases exercise capacity in patients limited by bronchospasms. Antihistamines: No effects on hemodynamic variables, the findings of resting or exercise ECG's, or exercise capacity. | |

| Calcium Channel Blockers | | |
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| Category | Medication Information | |
| Common Drugs | <i>Generic Name</i> | <i>Brand Name</i> |
| | Verapamil | Isoptin, Calan |
| | Diltiazem | Cardizem |
| Recommended by Cardiac Rehab Specialist | | |
| Treatment | Angina pectoris, coronary artery spasm, arrhythmias, hypertension. | |
| Mechanism | Inhibits inward flow of calcium into cardiac and vascular smooth muscle, so calcium cannot pull troponin off actin to expose active site for crossbridge of myosin. Results in potent vasodilation, which increases coronary blood flow and supply and decreases slow-channel conductance of cardiac impulses. Affects strength of contraction. | |
| Effect at Rest | Decreased HR (except for nifedipine/Procardia) and decreased BP. | |
| Effect During Exercise | Same as rest; may increase exercise capacity. Normal ischemic response generally not blunted. Agents (except nifedipine) prolong the PR interval (delay the electrical conduction through the atrioventricular node in the heart), with few other ECG effects. | |

Adaptation for Exercise Prescription

Addition or withdrawal of a calcium blocker to the therapeutic regimen of patient necessitates a new graded exercise test. Exercise prescription should be calculated by using data from an exercise test performed with the patient following the usual medicine regimen.

| Digitalis | | |
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| Category | Medication Information | |
| Common Drugs | <i>Generic Name</i> | <i>Brand Name</i> |
| | Digoxin | Lanoxin |
| Recommended by Cardiac Rehab Specialist | | |
| Treatment | Congestive heart failure (CHF), atrial fibrillation, atrial flutter. | |
| Mechanism | Improves myocardial contraction by altering the calcium utilization of the myocardial cell. | |
| Effect at Rest | No significant change in HR, BP, or exercise capacity, except for a decrease in HR due to vagal effect. | |
| Effect During Exercise | May decrease HR; will improve exercise capacity only in patients with atrial fibrillation or chronic heart failure (CHF). May produce false-positive results on the ECG, or ST segment depression in patients without coronary artery disease or ischemia. Use should be stopped 10 to 14 days prior to exercise test if possible. | |

| Diuretics | | |
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| Category | Medication Information | |
| Common Drugs | <i>Generic Name</i> | <i>Brand Name</i> |
| | Furosemide | Lasix, Furoside |
| | Sprionolactone | Aldactone |
| Recommended by Cardiac Rehab Specialist | | |
| Treatment | Hypertension, edema (swelling-cardiac, renal, hepatic). | |

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| Mechanism | Most diuretics alter renal function, resulting in increased excretion of electrolytes and fluid by the following means; 1. Benzothiazides inhibit reabsorption of sodium and chloride in the distal tubule. 2. Loop diuretics inhibit sodium and chloride reabsorption in the ascending loop of Henle. 3. Potassium-sparing diuretics are antagonist of aldosterone, or inhibit sodium reabsorption and potassium excretion. |
| Effect at Rest | No effect on HR; may decrease BP. |
| Effect During Exercise | May decrease BP; may affect CHF patient, may induce arrhythmias (PVCs due to hypokalemia), HR or exercise capacity is typically not affected; however, hypovolemia may result in decreases in cardiac output, renal perfusion, and blood pressure. |
| Adaptation for Exercise Prescription | Check for hypokalemic conditions in patients receiving diuretics. Hypotension possible in postexercise period caused by hypovolemia; avoid dehydration before and after exercise; increase cool-down period. |

| Nitrates | | |
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| Category | Medication Information | |
| Common Drugs | <i>Generic Name</i> | <i>Brand Name</i> |
| | Isosorbide Mononitrate | Isno, Imdur, Monoket |
| | Nitroglycerin | Nitro-bid, Nitrostat, Nitrolingual, Nitrogard, Nitrong, Nitro-Dur, Nitrol |
| Recommended by Cardiac Rehab Specialist | | |
| Treatment | Angina pectoris (used with beta-blocker or calcium channel blocker to reduce workload). | |
| Mechanism | Nitrates relax the smooth muscle of blood vessels by a direct effect, causing vasodilation. Decreased venous return causes decreased preload; arterial dilation decreases vascular resistance and arterial blood pressure. | |
| Effect at Rest | Increased heart rate, decreased blood pressure, decreased workload and O ₂ consumption of heart. | |
| Effect During Exercise | Increased heart rate, decreased blood pressure, increased anginal threshold, increased exercise capacity, but decreased arterial pressure may result in hypotension. | |
| Adaptation for Exercise Prescription | Use of medication prior to reduce anginal occurrence. Longer for cool-down in postexercise period to reduce possibility of postural hypotension. Prescription involving target heart rate needs no alteration. | |

| Psychotropic Agents | | |
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| Category | Medication Information | |
| Common Drugs | <i>Generic Name</i> | <i>Brand Name</i> |
| | (major tranquilizer) | |
| | phenothiazine | Thorazine, Mellaril |
| Recommended by Cardiac Rehab Specialist | | |
| Treatment | Prescribe antipsychotic medications, major tranquilizers. | |
| Mechanism | Anticholinergic and direct myocardial depressant alpha-adrenergic blockade. | |
| Effect at Rest | May result in elevated HR, decreased BP, or orthostatic hypertension. The following ECG changes occur: increased PR and QT intervals (electrical conduction abnormalities), QRS widening, ST segment depression, blunting of T-wave. | |
| Effect During Exercise | | |
| Adaptation for Exercise Prescription | | |

| Sympatholytics (Drugs Interfering with SNS) | | |
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| Category | Medication Information | |
| Common Drugs | <i>Generic Name</i> | <i>Brand Name</i> |
| | Carvedilol | Coreg |
| Recommended by Cardiac Rehab Specialist | | |
| Treatment | Treatment of hypertension. | |
| Mechanism | A variety of mechanisms exist, but all agents interfere with the effects of the SNS on the blood vessels or the heart by depleting or preventing the release of NE, reducing HR and contractility, decreasing activity of the SNS in the brain, or blocking alpha receptors in the vessels causing vasodilatation. | |
| Effect at Rest | May decrease resting HR, decreases resting BP. Reserpine may cause depression, fatigue, and decreased desire for exercise. | |
| Effect During Exercise | May decrease HR; decreases BP. No effect noted on ECG or exercise capacity. | |
| Adaptation for Exercise Prescription | Some medications may produce orthostatic hypotension, especially immediately after exercise. Gradual cool-down recommended. | |

| Tricyclic Antidepressants | | |
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| Category | Medication Information | |
| Common Drugs | <i>Generic Name</i> | <i>Brand Name</i> |
| | Imipramine, Amitriptyline | Tofranil, Elavil |
| | Desipramine | Norpramin |
| Recommended by Cardiac Rehab Specialist | | |
| Treatment | Prescribe antidepressant. | |
| Mechanism | Block intake of NE in CNS. | |
| Effect at Rest | May have increased HR, lower BP, increased tendency for arrhythmias, orthostatic hypotension, inversion or flattening of T-wave, possible false-positive test results. | |

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| Effect During Exercise | |
| Adaptation for Exercise Prescription | |

| Vasodilators | | |
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| Category | Medication Information | |
| Common Drugs | <i>Generic Name</i> | <i>Brand Name</i> |
| | Ramipril | Altace |
| Recommended by Cardiac Rehab Specialist | Lisinopril - Ace Inhibitors | |
| Treatment | Hypertension. CHF. | |
| Mechanism | Hydralazine and minoxidil act directly on vascular smooth muscle to cause relaxation and dilation. Captopril inhibits angiotensin-converting enzyme (ACE), which indirectly results in vasodilation (inhibits conversion of AI to vasoconstrictor AII). This vasodilation reduces blood pressure (decreases afterload). Results in decreased blood pressure and workload of the heart. Undesirable effects include increased HR and contractility, which impose a greater workload on the heart. | |
| Effect at Rest | Decrease in BP, possible increase in HR. | |
| Effect During Exercise | Reflex tachycardia, which may bring on anginal response. Postexercise hypotension may be | |

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| | accentuated by any of these medications. |
| Adaptation for Exercise Prescription | Gradual cool-down for prevention of hypotension after exercise. Effects of medications on exercise prescription are related to their effects on HR. Exercise prescription should be based on exercise test results while medicated. |

| Other Agents | |
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| Category | Medication Information |
| Alcohol | Depresses heart indirectly by acting within the CNS. Recent studies show chronic excessive use has a deleterious effect on the heart (may produce myocardial damage). Not a coronary vasodilator. Alcohol may prevent the sensation of anginal pain, probably due to central depressant effects. Alcohol will not suppress the ECG changes that occur with exercise testing in patients with coronary atherosclerosis, but it may suppress associated anginal pain. |
| Thyroid Medications | When used to correct thyroid abnormality, and maintain state of euthyroidism, no abnormal cardiovascular effects. Levothyroxine (Synthrox) - may produce elevations of HR and BP at rest and during exercise; cardiac arrhythmias, possible ischemia and angina. |
| Cold Remedies | Phenylpropanolamine, phenylephrine, pseudoephedrine These agents may transiently increase HR and BP |
| Nicotine | Ganglionic stimulant causing vasoconstriction, elevated blood pressure, and tachycardia, resulting in increased cardiac workload. Because of release of epinephrine and NE, resulting effects include increases in HR and SBP, DBP, and pulse pressures. Excessive use may cause premature systole, atrial tachycardia, decrease in amplitude and inversion of T-wave, or angina and myocardial ischemia, atrial or ventricular arrhythmias. |