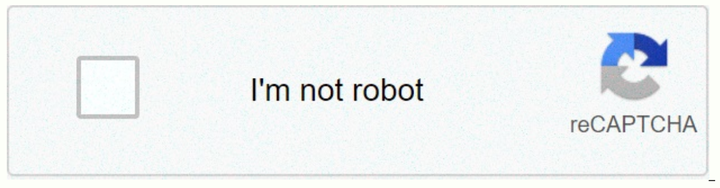

Continue

Hydralazine iv to oral conversion

IV: When urgent need, treatment in the hospitalized patient can be initiated intramuscularly or as a rapid intravenous bolus injection directly into the vein. Hydralazine hydrochloride injection should only be used when the medicinal product cannot be administered orally. The usual dose is 20 to 40 mg, repeated as needed. Some patients (especially those with marked kidney damage) may require a lower dose. Blood pressure should be checked frequently. It can start to fall within a few minutes after injection, with the average maximum reduction occurring in 10 to 80 minutes. In cases where there has been increased intracranial pressure, lowering blood pressure can increase cerebral ischemia. Most patients can be transferred to oral hydralazine hydrochloride within 24 to 48 hours. The product should be used immediately after opening the vial. The product should not be added to infusion solutions. Hydralazin hydrochloride injection can be discoloured upon contact with metal; discoloured solutions should be discarded. Parenteral medicinal products should be inspected visually for particulate matter and discoloration prior to administration, when dissolving and container permitting. Oral: Initiate treatment in gradually increasing doses; adjusted according to individual response. Start with 10 mg four times a day for the first 2 to 4 days, increasing to 25 mg four times a day for the balance in the first week. For the second and subsequent weeks, increase the dose to 50 mg four times a day. For maintenance, adjust dosage to the lowest effective levels. The incidence of toxic reactions, especially L.E. cell syndrome, is high in the group of patients receiving large doses of hydralazine. In a few resistant patients, up to 300 mg of hydralazine daily may be required for a significant antihypertensive effect. In such cases, a lower dose of hydralazine combined with thiazide and/or reserpine or a beta blocker may be considered. But when combining therapy, individual titration is essential to ensure the lowest possible therapeutic dose of each drug. HTN: Basically 10 mg qid - increase by 10-25 mg/dose q 2-5 days (maximum: 300 mg/day). Acute hypertension: Basically 10-20 mg IM/IV q 4-6 hours pern. May increase to 40 mg/dose (switch to oral therapy as soon as possible). CHF: Basically 10 to 25mg oral 3-4 times / day. Maintenance: Usually 200 to 600 mg daily in 2-4 divided doses. [>50 ml/min]: No changes [10-50]: Give regular dose q8h or less. [<10]: Give q8-16 hours in fast acetylene and q12-24 hours in slow acetyls. Give q8 to 16 hours in fast acetyles and q 12-24 hours in slow acetyles. The National Institutes of Health, U.S. National Library of Medicine, DailyMed Database.Provides access to the latest drug monographs submitted to the Food and Drug Administration (FDA). Please review the latest current packing insert for further information and Updates. You can find a local search option for this data here. AdultPediatricDosage Forms & Strengthens injectable solution tablets 10 mg PO q6hr for 2-4 days; 25 mg q6t daily for the first week; increase to 50 mg q6hr from the second week on; adjust the dose to the lowest effective levels 20-40 mg IM/IV; repeat as needed Dosage considerations Change to oral treatment as soon as possible Hypertension (Chronic) Initial: 10 mg PO q6t for 2-4 days; may increase gradually by 10-25 mg/dose every 2-5 days up to 50 mg PO q6t (some patients require 300 mg/day) See also combination with isosorbid dinitrate Hypertensive Crisis 10-40 mg IV/IM; not to exceed 20 mg / dose; repeat PRN Pregnancy-associated 5-10 mg IV/IM initially, THEN 5-10 mg q20-30min PRN, OR 0.5-10 mg/hour IV infusion Congestive heart failure Starting dose: 10-25 mg PO q6-8hr; titrate dose q2-4weeks Maintenance dose: 225-300 mg/day PO divided q6-8hr Dosing considerations Adjust the dose per individual response Dosage forms and strengthen injectable solution tablets 1.7-3.5 mg/kg/day IM or IV divided into 4-6 doses. Heart failure, Infants with postload reduction: 0.1-0.5 mg/kg/dose IV q6-8h; not exceed 2 mg/kg/dose Children and adolescents: 0.15-0.2 mg/kg/dose IV q4-6h; not exceed 20 mg/dos Oral administration Infants and the elderly: 0.75-3 mg/kg/day PO divided q6-12 h; not exceed 200 mg/day or 7 mg/kg/day Hypertensive crisis Infant or elderly: 0.1-0.2 mg/kg IV/IM q4-6 h PRN initially; may increase to the usual dose of 1.7-3.5 mg/kg/day divided q4-6h; not exceed 20 mg/dose IM or IV or 2 mg/kg q3-6h at cumulative dose not to exceed 9 mg/kg Hypertension (chronic) Specialization: 0.75-1 mg/kg/day PO divided q6-12 t Maximum dose in infants (Maximum dose in children (> 1 year): 7.5 mg/kg/day PO divided q6-12hr; not to exceed 200 mg / day Increase gradually over 3-4 weeks No interactions Found Interactions FoundContraindicatedSerious - Use AlternativeSignificant - Monitor CloselyMinorAll Interactions Sort by: SeverityName Hypotension Palpitations Patisserie Tachycardia Headache Peripheral Edema Vascular Collapse Peripheral Neuropathy Anorexia Diarrhea Nausea Vomiting Psychotic Reaction Agranulocytosis Leukopeni Hepatotoxicity Breast Pain Dyspnoea Nasal density Paralysis ileus Dysurea Thrombocytopenia Peripheral neuritis Rheumatoid arthritis Agranulocytosis Arthralgia SLE syndrome Hypersensitivity to hydralazin Coronary artery disease Mitral valve rheumatic heart disease Ants may induce SLE-type syndrome (usually at >200 mg /day); instruct patients to report joint/chest pain or fever; discontinue treatment unless the benefits outweigh the risks; steroid therapy may be necessary long-term use caution in CVA , severe renal impairment, volume depletion, existing hypotension, concurence with other hypotensive agents, CAD (potential contraindication) Be careful with mitral valvular may increase the pulmonary artery pulmonary artery Discontinue slowly to avoid rapid increase in blood pressure Use with caution in patients with pulmonary hypertension; may cause hypotension Increases fluid and sodium retention; may require treatment or increase in diutratic dose Peripheral neuritis, including numbness, paresthesia and tingling, reported; treat symptoms with pyridoxine Blood dyscarsias, including decrease in the number of red blood cells, agranulocytosis, leukopenia, reported in treatment; discontinue treatment if any of the haematological effects occur Pregnancy category: C Breastfeeding: Excreted in breast milk; be carefulPregnancy category A: Generally acceptable. Controlled studies in pregnant women show no evidence of foetal risk. B: May be acceptable. Either animal studies show no risk, but human studies that are not available or animal studies showed less risk and human studies made and showed no risk. C: Use with caution if the benefits outweigh the risks. Animal studies show risks and human studies that are not available or neither animal nor human studies done. D: Use in life-threatening emergencies when no safer substance is available. Positive evidence of human foetal risk. X: Do not use during pregnancy. The risks involved outweigh potential benefits. There are safer options. NA: Information is not available. Direct vasodilator; expands arteriols with little effect on the vein; reduces systemic resistance, which subsequently reduces blood pressure. Absorption Bioavailability: Slow acetylene: 30-50%; rapid acetylene: 22-30% Eruption: 5-20 min, maximum power 10-80 min (IV); 20-30 min (PO) Duration: 3-8 hr (PO); 1-4 hr (IV) Distribution Protein bound: 85-90% Vd: 0.3-8.2 L/kg Metabolism Significantly metabolized in the liver by acetylation; slow and fast acetyler metabolites: Fensanzine and pyruvic acid hydrozone metabolites (inactive metabolite) Elimination Half-life: 2-8 hours (normal renal function); 7-16 hours (end stage renal disease) Excretion: Urinary (14%; unchanged) Pharmacogenomi HLA-DRw4 is shown in 73% of patients experiencing hydralazin-associated SLE solution: D5W, D10/LR, fructose 10%, fructose 10%/NS Additive: Aminofylline, amphibianline, chlorothiazide, dobutamine, CaNa2EDTA, ethacrynate, hydrocortisone sodium succinate, mephentermine, meohexital, nitroglycerin, phenobarbital, verapamil Y-site: Aminophylline, ampicillin, diazoxide, furosemide IV Compatibility Solution: Dextrose-Ringer combinations, D5/LR, dextrose 2.5%/1/2LR, dextrose-saline combinations, D10W, Rings, LR, 1/2NS, NS, Na-lactate 1/1/16 M Y-site: Heparin, hydrocortisone sodium succinate, nitroglycerin (compatible for 3 hours; may form small dpi), KCl, verapamil, vit B/C IV Preparation Prepare immediately before use Minimize contact with metal parts during preparation and administration IV/IM Administration Administer undiluted IM or so slowly push directly into the vein; in children the maximum rate is 5 mg / min; can also be administered as a continuous infusion Avoid adding infusion solution Storage agent at controlled room temperature Do not refrigerate FormularyPatient DiscountsAdding plans, you can compare formulating status with other medicinal products of the same class. To view formula information, first create a list of plans. Your list is saved and can be edited at any time. By adding plans, you can:View the formulas and any limitations for each plan. Manage and view all your plans together— even plans in different states. Compare formulas status with other drugs in the same class. Access the schedule list on any device — mobile or computer. Medscape prescription drug monographs are based on FDA-approved labeling information, unless otherwise stated, combined with additional data derived from primary medical literature. Grade: Direct vasodilators VA Class: CV490 CAS Number: 304-20-1 Medically reviewed by Drugs.com. Last Updated Aug 1, 2017 10:0 Introduction Vasodilating agent.134 e Applications for hydrALAZINE Hypertension Treatment of hypertension (alone or in combination with other classes of antihypertensive agents).134 Not considered a preferred agent for initial treatment of hypertension according to current guidelines for the treatment of hypertension in adults, but can be used as an adjunct therapy if BP is not adequately controlled with recommended antihypertensive drug classes (e.g. ACE inhibitors, angiotensin II receptor antagonists, calcium channel blockers, thiazide diuretics).501 502 503 504 1200 Individualize treatment selection; assess patient characteristics (e.g. age, ethnicity/race, comorbidities, cardiovascular risk) as well as drug-related factors (e.g. easy administration, availability, adverse reactions, costs).501 502 503 504 515 1200 1201 A 2017 ACC/AHA multidisciplinary hypertension direction classifies BP in adults in 4 categories: normal, elevated, stage 1 hypertension and stage 2 hypertension.1200 (see Table 1.) Source: Whelton PK, Carey RM, Aronow WS et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for prevention, detection, evaluation and handling of high blood pressure in adults: a report by the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Hypertension. 2018;71:E13-115. People with SBP and DBP in 2 different categories (e.g. elevated SBP and normal DBP) should be indicated as in the higher BP category (it will want elevated BP). Table 1. ACC/AHA BP Classification in adults1200 category SBP (mm Hg) DBP (mm Hg) Normal <120 and <80 Elevated 120–129 and <80 Hypertension, Steps 1 130–139 or 80–89 Hypertension, Steps 2 ≥140 or ≥90 The goal of hypertension management and prevention is to achieve and maintain optimal control over BP.1200 Bp thresholds used to define hypertension, the optimal BP threshold for antihypertensive drug therapy, and the ideal target BP values BP values controversial.501 503 504 505 506 507 508 515 523 526 530 1200 1201 1207 1209 1222 1223 1229 2017 ACC/2017 ACC/A THE HA hypertension guideline generally recommends a target BP goal (that is, BP to achieve with medication and/or nonpharmacologic intervention) of <130/80 mm Hg in all adults regardless of comorbidities or level of atherosclerotic cardiovascular disease (ASCVD) risk.1200 Additionally, an SBP target of < 130 mm Hg is generally recommended for non-ininstitutionalised ambulatory patients ≥ 65 years of age with an average SBP of ≥ 130 mm Hg.1200 These BP targets are based on clinical studies showing continued reduction of cardiovascular risk at gradually lower levels of SBP.1 1200 These BP targets are based on clinical studies showing continued reduction of cardiovascular risk by gradually lower levels of SBP.1200 These BP targets are based on clinical studies showing continued reduction of cardiovascular risk by gradually lower levels of SBP.1200 These BP targets are based on clinical trials showing continued reduction in cardiovascular risk at gradually lower levels of SBP.1200 These BP targets are based on clinical studies showing continued reduction of cardiovascular risk at gradually lower levels of SBP.1200 These BP targets are based on clinical studies showing continued reduction of cardiovascular risk by gradually lower levels of SB P.1200 These BP targets are based on clinical studies showing continued reduction of cardiovascular risk at 1200 1202 1210 Other hypertension guidelines have generally based target BP targets on age and comorbidities.501 504 504536 Guidelines issued by the JNC 8 Expert Panel have generally targeted a BP target of <140/90 mm Hg regardless of cardiovascular risk , and have used higher BP thresholds and target BPs in elderly patients501 504 536 compared to those recommended by the 2017 ACC/AHA hypertension guideline.1200 Some clinicians continue to support previous target BPs recommended by JNC 8 due to concerns about the lack of generalizability of data from some clinical trials (e.g. study) used for to support the 2017 ACC/AHA hypertension guideline and potential harm (e.g. adverse reactions, costs of treatment) versus the benefits of BP lowering in patients at lower risk of cardiovascular disease.1222 1223 1224 1229 Consider the potential benefits of hypertension therapy and drug costs, adverse reactions and risks associated with the use of multiple antihypertensive medicinal products when determining the patient's BP treatment goals.1200 1220 For decisions on when to initiate medication (BP threshold), 2017 incorporates the ACC/AHA hypertension guidelines.1200 1207 ASCVD risk assessment is recommended by the ACC/AHA for all adults with hypertension.1200 ACC/AHA currently recommends initiation of antihypertensive medication at an SBP ≥ 140 mm Hg or DBP ≥ 90 mm Hg in adults who have not previously had cardiovascular disease (e.g. primary prevention) and low ASCVD risk (10 years of risk <10%).1200 For secondary prevention in adults with known cardiovascular disease or for primary prevention in people at higher risk of ASCVD (10-year risk ≥ 10%), ACC/AHA recommends initiating antihypertensive drug therapy at mean SBP ≥ 130 mm Hg or an average DBP ≥80 mm Hg.1200 Adults with hypertension and diabetes mellitus, chronic kidney disease (CKD), or age ≥ 65 years are believed to be at high risk of cardiovascular disease; ACC/AHA states that such patients should have antihypertensive drug therapy initiated at a BP ≥130/80 mm Hg.1200 Individualizing drug treatment in patients with hypertension and and cardiovascular or other risk factors.502 1200 In stage 1 hypertension, experts say that it is reasonable to initiate medication using the

stepped-care approach in which one drug is initiated and titrated and other drugs are added sequentially to achieve the target BP.1200 Consider the initiation of antihypertensive therapy with 2 first-line agents from different pharmacological classes in adults with stage 2 hypertension and mean BP >20/10 mm Hg over the BP target.1200 Severe hypertension and hypertensive crises One of several recommended parenteral agents for use in the hospital setting to urgently reduce BP in severe hypertensive pregnant women, including those with preeclampsia†.112 139 540 1200 Historically considered the best remedy for the treatment of hypertensive emergencies associated with pregnancy (e.g. preeclampsia , eclampsia);542, however, some clinicians prefer IV labetalol for its faster effect , shorter duration of action and more predictable hypotensive effect.502 542 Parenteral treatment of severe hypertension when the drug cannot be administered orally or when BP must be lowered immediately;e other parenteral antihypertensive agents (e.g. labetalol, esmolol, phenoldopam, nicardipine, sodium nitroprusside) is usually preferred for these indications.502 542 1200 b Is not recommended for the treatment of severe hypertension or hypertensive emergency associated with cerebrovascular accidents or in patients with cerebral edema and encephalopathy.b Heart failure Used in fixed combination with isosorbiddinitrate as supplement to the treatment of heart failure in self-creation identified black patients to improve survival, reduce hospitalization for worsening heart failure and improve patient-reported functional status.135 136 137 Current guidelines recommend a combination of drug therapy (e.g. ACE inhibitors, angiotensin II receptor antagonists, angiotensin receptor neprilysin inhibitors [ARNIs], β-adrenergic blockers [β aldosterone receptor antagonists) in adults with heart failure to reduce morbidity and mortality.524 701 703 800 Combination of hydralazine and isosorbid dinitrate recommended by ACCF and AHA for self-identified black patients with NY ACUTE heart failure or IV heart failure and reduced ejection fraction receiving optimal treatment with ACE inhibitors and β-blockers, unless contraindicated.524 ACCF and AHA states that combined treatment with hydralazine and isosorbid dinitrate may also be useful in patients with current or previous symptomatic heart failure with reduced ejection fraction who cannot receive an ACE inhibitor or angiotensin II receptor antagonist† due to drug intolerance, hypotension or renal insufficiency.524 hydrALAZINE Dosage and administration General BP monitoring and treatment target Monitor BP regularly (that is, monthly) during and adjust the dosage of the antihypertensive medicinal product until BP controlled.1200 If unacceptable adverse reactions occur, the medicinal product should be discontinued and initiated another antihypertensive agent from another pharmacological class.1216 If adequate BP response is not achieved with a single antihypertensive agent, either increase the dose of the single drug or add a second drug with demonstrated benefit and preferably a complementary mechanism of action (e.g. ACE inhibitor, angiotensin II receptor antagonist, calcium channel blocks, thiazide diuretics).1200 1216 Many patients will require ≥2 drugs from different pharmacological classes to achieve BP targets; if target BP is still not achieved with 2 antihypertensive agents, add a third drug.1200 1216 1220 Hypertensive Crises Monitor BP carefully when parenteral hydralazin is used.e Avoid abrupt discontinuation in patients with marked reduction in BP.109 To minimize the risk of sudden BP increase, reduce the dose gradually.b Adults with hypertensive emergency and a convincing indication – pheochromocytoma crisis, severe preeclampsia or eclampsia: Reduce SBP to < 140 mm Hg within the first hour.1200 Adults with hypertensive emergency and a convincing indication – acute aortic dissection: Reduce SBP to < 120 mm Hg within the first 20 minutes.1200 Children and adolescents: Some experts suggest reducing BP by ≤25% of the planned reduction in during the first 8 hours, with the rest of the planned reduction over the next 12-24 hours.1150 The first measure of IV treatment in adults without a convincing indication is to reduce systolic BP by ≤25% within the first hour followed by further reduction if stable to 160/110 or 160/100 mm Hg Within the next 2-6 hours, avoid excessive reductions in pressure that may trigger renal, brain or coronarymias.1200 If this BP is well tolerated and the patient is clinically stable, further gradual reductions against normal BP may be implemented over the next 24-48 hours.1200 Administration Administer orally or by IM or IV injection.b Usually administered orally; Can be administered im or IV if the patient cannot take the drug orally or if a rapid reduction in BP is required.b Oral Administration Administer orally 2-4 times a day.134 b IV Administration For information on solution and drug compatibility, see Compatibility under Stability. Administer by rapid IV injection directly into the vein.e Replace parenteral therapy with oral therapy as soon as possible.b Dosage Available as hydralazin hydrochloride; dosage expressed in the form of salt.b 20-25 mg IV hydralazine hydrochloride was approximately equal to 75-100 mg oral hydralazine hydrochloride in a study.b Paediatric patients hypertension† Oral Some clinicians recommend an initial dose of e-0.75 mg/kg daily given in 4 shared doses.601 Doses may be increased gradually (over 3-4 weeks) up to a maximum of 7.5 mg/kg (or 200 mg) daily.601 hypertension† IM or IV IV dosage: The manufacturer says that 1.7–3.5 mg/kg daily given in 4-6 shared doses is used.600 Severe hypertension with life-threatening symptoms IV or IM Some experts recommend initial dosing of 0.1–0.2 mg/kg per dose.1150 May increase the dose up to 0.4 mg/kg per dose.1150 Can administer every 4 hours when given by direct IV (bolus) injection.1150 Severe hypertension with non-life threatening symptoms Oral 0.25 mg/kg per dose up to 25 mg per dose; administer every 6-8 hours.1150 Adults Hypertension Oral Basically, 10 mg 4 times a day for 2-4 days.134 Dosage then can be increased to 25 mg 4 times a day for the rest of the week.134 If necessary, Dosage may be increased for other and subsequent weeks to 50 mg 4 times a day.134 Some experts recommend regular dosing of 100-200 mg daily, administered in 2 or 3 divided doses.1200 Severe hypertension/hypertensive crises IV Regular dose: Manufacturer states 20-40 mg, repeated as needed; Can transfer most patients to oral treatment within 24-28 hours.600 Alternatively, some experts recommend that 10-20 mg be repeated every 4-6 hours as needed.1200 IM Regular dose: The manufacturer says 20-40 mg, repeated as needed; may transfer most patients to oral treatment within 24-28 hours.600 Acute reduction of BP during pregnancy IV The usual starting dose is 5 mg 101 103 105 108 112 540 followed by 5-10 mg each 20-40 minutes as needed to achieve an adequate BP reduction.101 102 103 104 105 108 112 540 The maximum total dose of 20 mg is recommended.540 Heart failure Fixed combination Treatment with Isosorbide Dinitrate in self-identified black patients Oral Initially, hydralazin hydrochloride 37.5 mg and isosorbid dinitrate 20 mg (1 tablet Of BiDil) 3 times a day.135 524 May titrate dosing to a maximum tolerated dosage not to exceed 2 tablets (a total of 75 mg hydralazine hydrochloride and 40 mg isosorbiddinitrate) 3 times daily.135 524 Rapid titration (over 3-5 days) may be possible; However, slower titration may be required due to side effects.135 May reduce the dose to as little as half of the fixed combination tablet 3 times a day in patients experiencing intolerable effects, but try to titrate the dosage up when side effects decrease.135 Hydralazine Therapy† Oral ACCF and AHA recommend initial dosing of hydralazin hydrochloride 25–50 mg 3 or 4 times daily provide concomitantly with isosorbid dinitrate 20-30 mg 3 or 4 times a day.524 Titrate doses to levels similar to those recommended for firm combination preparation and administer both medicinal products at least 3 times daily.524 Prescribing limits pediatric patients hyperten Oral maximum 7.5 mg/kg daily (or 200 mg daily).601 Adult Heart failure Fixed combination therapy with Isosorbide Dinitrate in self-identified black patients Oral Maximum 75 mg hydralazine hydrochloride and 40 mg isosorbid (2 tablets BiDil) 3 times a day.135 Hydralazin treatment† Oral Maximum 300 mg daily administered concomitantly with isosorbid dinitrate (maximum 120 mg daily).524 Special populations Renal impairment Lower dose may be required for severe renal failure.b Geriatric patients Manufacturer of the firm combination of hydralazine hydrochloride and isos Orbiddinitrate states that dosing should be selected with caution due to age-related reductions in liver and kidney and/or cardiac function and concomitant disease and drug treatment.135 Warnings for hydrALAZINE Contraindications CAD.134 e Mitral valvular rheumatic heart disease.134 e Hypersensitivity to hydralazin hydrochloride or an ingredient in the formulation.134 e Hypersensitivity to hydralazin hydrochloride or an ingredient in the formulation.134 e Hypersensitivity to hydralazin hydrochloride or an ingredient in the formulation.134 e Hypersensitivity to hydralazin hydrochloride or an ingredient in the formulation.134 e Hypersensitivity to hydralazine hydrochloride or an ingredient in the formulation.134 e Hypersensitivity to hydralazin hydrochloride or an ingredient in the formulation.134 e Hypersensitivity to hydralazin hydrochloride or an ingredient in the formulation.1 134 e Hypersensitivity to hydralazin hydrochloride or an ingredient in the formulation.134 e Hypersensitivity to hydralazin hydrochloride or an ingredient in the formulation.134 e Hypersensitivity to hydralazin hydrochloride or an ingredient in the formulation.134 e Hypersensitivity to hydralazin hydrochloride or an ingredient in the formulation.13 4 e Hypersensitivity to hydralazin hydrochloride or an ingredient in the formulation.134 e Hypersensitivity to hydralazine hydrochloride or an ingredient in the formulation.134 e Hypersensitivity to hydralazin hydrochloride or an ingredient Warnings/precautions Warnings Systemic Lupus Erythematosus (SLE) May cause SLE (e.g. glomerulonephritis) or rheumatoid arthritis, especially in patients receiving > 200 mg daily dosing for prolonged periods , in slow acetylene of hydralazine, or in those with renal impairment.b If unexplained signs and symptoms (e.g. arthralgia, fever, chest pain, continued discomfort) occurs, perform appropriate laboratory studies (e.g. CBCs, ANA titer provisions).b If the test results confirm SLE, hydralazine discontinues unless the benefit outweighs risk.b Signs and symptoms usually return with hydralazine discontinuation, but residual effects can be detected after many years.134 b Long-term corticosteroid therapy may be required if symptoms do not recuse.b Sensitivity reactions Sulfate Some formulations contain sulphites that may cause allergic reactions (including anaphylaxis and life-threatening or less severe asthmatic episodes) in certain sensitive subjects.b General precautions Cardiovascular effects Possible precipitation of angina attacks and/or MI 134 b use with caution in patients with suspected coronary artery disease.134 e May increase lung artery pressure in patients with mitral valvular disease.134 e (see contraindications.) Possible orthostatic hypotension; use with caution in patients with cerebrovascular accidents,134,135 those who may be volume depleted, those with existing hypotension, or those receiving other hypotensive agents.135 b Drug interaction may paradoxically reduce the pressureor response to adrenaline.134 b neuritis Possible peripheral neuritis (e.g. paresthesia, numbness, tingling);134 e may be caused by pyridoxine deficiency.b If such symptoms occur, it may be caused by pyridoxine deficiency.b If such symptoms occur, it may be caused by pyridoxine deficiency.b If such symptoms occur, it may be caused by pyridoxine deficiency.b If such symptoms occur, it may be caused by pyridoxine deficiency.b If such symptoms occur, it may be caused by pyridoxine deficiency.b If such symptoms occur , it may be caused by pyridoxine deficiency.b If such symptoms occur, it may be caused by pyridoxine deficiency.b If such symptoms occur, it may be caused by pyridoxine deficiency.b If such symptoms occur, it may be caused by pyridoxine deficiency.b If such symptoms occur, it may be caused by pyridoxine deficiency.b If such symptoms occur, it may be caused by pyridoxine deficiency.b If such symptoms occur, concomitantly with pyridoxine.b Haematological effects Possible blood dyssasias (e.g. reduced hemoglobin and erythrocytes , leukopenia, agranulocytosis, thrombombocytopenia with or without purpura).134 e If such abnormalities occur, discontinue treatment.134 e Adequate patient monitoring Perform CBCs and ANA titer determinations prior to initiation and then periodically thereafter during prolonged treatment (even in patients).134 b e Manufacturers say that a positive ANA titer requires that the consequences of the test result be weighed against the benefits of treatment with the drug,134 e while some experts say that an increase in ANA titer requires immediate discontinuation of the drug.b Closely monitor hamodynamic and clinical status in patients with acute MI.135 Use of solid combinations When hydralazine is used in a firm combination with isosorbid dinitrate, you should consider the warnings, precautions and contraindications associated with isosorbid dinitrate.135 Specific populations Pregnancy Category C.134 e Lactation Distributed to milk.b Be careful.134 e Paediatric use Safety and efficacy alone or in firm combination with isosorbid dinitate as not established.134 135 e Use is based on clinical experience.134 e Geriatric use Insufficient experience in patients ≥ 65 years of age to determine whether geriatric patients respond differently than younger adults.135 (See geriatric patients during dosing.) Renal impairment Generally considered safe; manufacturers condition to use with caution in severe renal impairment.b Common side effects Headache, palpitations, tachycardia.b Interactions for hydrALAZINE Specific drugs Interaction Comments β-block additive hypotensive effectb Simultaneous use may minimize negative heart effects (e.g. tachycardia, precipitation of angina) associated with hydralazinezineb Usually used for therapeutic benefit; adjust doses carefully and monitor for excessive BP reductionb Diazoxide, IV (no longer commercially available in the United States) Possibly deep hypotensive episodesb Diuretics Additive hypotensive effectb Simultaneous use may prevent tolerance to hydralazine and also prevent sodium retention and increased plasma volume that may occur after prolonged hydralazin therapy b Commonly used for therapeutic benefit; adjust dosage carefully and monitor for excessive BP reductionb Adrenaline Reduced pressor response to adrenaline134 e Hypotensive agents Additive hypotensive effectb Usually used for therapeutic benefit; adjust the dosage closely and monitor for excessive BP reduction b MAO inhibitors Synergistic effect, resulting in marked BP reduction b Use simultaneously with cautious Fosfodiesterase inhibitors (PDE), selective when using hydralazine in fixed combination with isosorbiddinitrate Sildenafil and other selective PDE inhibitors (e.g. tadalafil, vardenafil) may deeply enhance vasodilating effects of isosorbid dinitrate and potentially life-threatening hypotension and/or haemadynamic compromise may result in 135 Due to the serious risk of concomitant use of isosorbid dinitrate and selective P INHIBITORS, such combined use is contraindicated 135 hydrALAZINE Absorption of pharmacokinetics Bioavailability Absorption from the GI canal is rapid;b 66% of an oral dose can be absorbed.135 The onset of oral antihypertensive effect occurs for 20-30 minutes.b after instant message administration, hypotensive effect occurs within 10-30 minutes.b After ivs administration, hypotensive effect occurs within 5-20 minutes, the maximum of 10-80 minutes.b Duration After oral administration, antihypertensive effect lasts 2-4 hours.b After instant messaging administration, hypotensive effect lasts 2-6 hours.b After 2.6 hours.b After 2.134 The effect of food on the bioavailability of hydralazine when administered in a fixed combination with isosorbiddinitrate is not known.135 Degree of distribution Widely distributed to body tissue in animals;b highest concentrations in the kidneys, plasma and liver; high affinity for arterial walls;b lower concentrations in the brain, lungs, muscles, heart and fat.b Easily cross the placenta.b Distributed into milk.b PlasmaProtein Binding 85-87% .b Elimination Metabolism Metabolized widely in the GI mucosa during absorption and in the liver by acetyleration, hydroxylation, and bending with glucuronic acid.b Acetylation rate is genetically determined; slow acetylene have higher plasma hydral concentrations than rapid acetylene at the same oral dose.b Elimination route Excreted mainly in urine as metabolites and in feces (10%) . b Half-life Plasma half-time: approximately 2-4 hours.b Special populations Not known whether hydralazine is dialysable.b Not known if renal or hepatic impairment has an effect on the pharmacokinetics of hydralazin.135 Hydralazin may be eliminated more slowly in geriatric patients.135 Storage tablets Clogged, light-resistant containers at 15-30 °C.134 b Tablets (Hydralazin hydrochloride and Isosorbide Dinitrate) Dense, easy-to-use containers at 25°C (may be exposed to 15-30°C).135 Parenteral injection 15-30°;e avoid freezing.b Compatibility For information on systemic interactions resulting from concomitant use, see Interactions. Parenteral Color Change develops after dilution with most IV infusion solutions.b Color changes occurring over 8-12 hours generally do not indicate loss of strength when stored at ≤ 30°C.b Solution CompatibilityHID Compatible Dextrose–Calling injection combinations Dextrose 5% in Ringer's injection, lacated Dextrose 2.5% in semi-strength Rings injection, lacated Dextrose-saline combinations Dextrose 2.5 or 10% in water Ionosol products Calling injection Calling injection, lactate sodium chloride 0.45 or 0.9% sodium lactate 1/6 M Incompatible Dextrose 5% in water Dextrose 10% in Ringer's injection, lactate compatibility admixture CompatibilityHID Compatible Dobutamine HCl Incompatible aminofyllinalycophonic sodium chlorothiazide sodium Edetat calcium dihalirium Ethakrynatate sodium sodium sodium succinate Methohexital sodium Nitroglycerin Phenobarbital sodium Verapamil HCl Y-Site CompatibilityHID Compatible Caspofungin acetate Heparin sodium Hydrocortisone sodium succinate Potassium chloride Verapamil HCl Incompatible Aminophylline Ampicillin Sodium Furosemide Nesiritide Variable Nitrog Articulating Effects Mechanism of action as an antihypertensive agent is believed to be the result of a direct vasodilating effect on vascular smooth muscle.134 e Advice to patients The importance of informing clinicians about the occurrence of SLE symptoms (e.g. joint or chest pain or fever).134 e Potential to impair mental alertness or physical coordination; avoid driving or using machines until effects on the individual are known.134 e The importance of consulting a clinician if headaches continue with repeated dosing.135 The importance of informing patients receiving hydralazine in a fixed combination with isosorbid dinitrate as insufficient fluid intake or excessive fluid loss due to diarrhoea, vomiting or sweating can lead to excessive hypotension, possibly leading to lighthead or syncope; if syncope occurs, treatment should be discontinued and alert clinician immediately.135 The importance of taking hydralazine regularly and continuously as prescribed.134 e The importance of informing clinicians about existing or considered concomitant treatment, including prescription drugs and OTC drugs, as well as concomitant diseases.134 e The importance of women informing clinicians if they are or planning to become pregnant or planning to breastfeed.134 e The importance of informing patients about other important precautions.134 e (see Precautions.) Preparations Excipients in commercially available drug preparations may have clinically important effects in some individuals; specific product labelling for more information. See the ASHP Drug Shortages Resource Center for information on the lack of one or more of these preparations. * available from one or more manufacturer, distributor, and/or repackags of generic (non-proprietary) name hydrALAZINE hydrochloride routes dosage forms dosage forms brand name Manufacturer Oral tablets 10 mg* Hydralazine Hydrochloride Tablets 25 mg* Hydralazine Hydrochloride Tablets 50 mg* Hydralazine hydrochloride tablets 100 mg* Hydralazine hydrochloride tablets parenteral injection 20 mg/ml* Hydralazine hydrochloride injection hydrALAZINE hydrochloride combinations Routes Dosage forms Dosage forms Strengthens Brand Name Manufacturer Oral Tablets, 37.5 mg of Isosorbide Dinitrate 20 mg BiDil (scored) NitroMed AHFS DI Essentials™. © Copyright 2020, Selected revisions 1. 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