methyl dopa (meth-il-doe-pa)

Classification
Therapeutic: antihypertensives
Pharmacologic: centrally acting antihypertensives

Pregnancy Category B

Indications
Management of moderate to severe hypertension (with other agents).

Action
Stimulates CNS alpha-adrenergic receptors, producing a decrease in sympathetic outflow to heart, kidneys, and blood vessels. Result is decreased BP and peripheral resistance, a slight decrease in heart rate, and no change in cardiac output. Therapeutic Effects: Lowering of BP.

Pharmacokinetics
Absorption: 50% absorbed from the GI tract. Parenteral form, methyldopate hydrochloride, is slowly converted to methyldopa.
Distribution: Crosses the blood-brain barrier. Crosses the placenta; small amounts enter breast milk.
Metabolism and Excretion: Partially metabolized by the liver, partially excreted unchanged by the kidneys.
Half-life: 1.7 hr.

TIME/ACTION PROFILE (antihypertensive effect)

<table>
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<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tbody>
<tr>
<td>PO</td>
<td>4–6 hr</td>
<td>12–24 hr</td>
<td>24–48 hr</td>
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<tr>
<td>IV</td>
<td>4–6 hr</td>
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Contraindications/Precautions
Contraindicated in: Hypersensitivity; Active liver disease.

Drug Interactions
Additive hypotension with other antihypertensives, acute ingestion of alcohol, anesthesia, and narcotics. Amphetamines, barbiturates, tricyclic antidepressants. May affect and risk of psychiatric; haloperidol. Additive sympathomimetic effect of methyldopa. May affect CNS depression; levodopa. Additive CNS toxicity. May affect CNS toxicity with levodopa. Additive CNS depression may occur with alcohol, cannabinoids, sedative hypnotics, some antipsychotics, and opioid analgesics. Concurrent use with non-selective beta-blockers may rarely cause paradoxical hypertension.

Route/Dosage

**PO (Adults):** 250–500 mg 2–3 times daily; may be q every 2 days as needed. Usual maintenance dose is 500 mg–2 g/day (not to exceed 3 g/day).

**PO (Children):** 10 mg/kg/day (300 mg/m2/day); may be q every 2 days up to 65 mg/kg/day in divided doses (not to exceed 3 g/day).

**IV (Adults):** 250–500 mg q6h (up to 1 gqd).

**IV (Children):** 5–10 mg/kg q6h, up to 65 mg/kg/day in divided doses (not to exceed 5 g/day).

NURSING IMPLICATIONS

Assessment
Monitor BP and pulse frequently during initial dose adjustment and periodically during therapy. Report significant changes.

Interactions
Monitor intake and output ratios and weight and assess for edema daily, especially at beginning of therapy. Report weight gain or edema; sodium and water retention may be treated with diuretics.

**Adverse Reactions/Side Effects**
CNS: sedation, mental confusion. CV: orthostatic hypotension, bradycardia, dizziness, edema, orthostatic hypotension, visual disturbances. Other: dry mouth, rash, tinnitus, drowsiness, headache. 

**Overdosage:** Sedation, vomiting, hypotension.

**Discontinued.**
Assess patient for depression or other alterations in mental status. Notify health care professional if these symptoms develop.

Monitor temperature during therapy. Drug fever may occur shortly after initiation of therapy and may be accompanied by eosinophilia and hepatic function changes. Monitor hepatic function test if unexplained fever occurs.

Lab Test Considerations: Monitor renal and hepatic function and CBC before and periodically during therapy.

Monitor direct Coombs’ test before and after 6 and 12 mo of therapy. May cause a positive direct Coombs’ test rarely associated with hemolytic anemia.

May cause: BUN, serum creatinine, potassium, sodium, proctibi, AST, ALT, alkaline phosphatase, and bilirubin concentrations.

May cause prolonged prothrombin time.

May interfere with serum creatinine and AST measurements.

Potential Nursing Diagnoses

Risk for injury (Side Effects)

Noncompliance (Patient/Family Teaching)

Implementation

Fluid retention and expanded volume may cause tolerance to develop within 2–3 mo after initiation of therapy. Diuretics may be added to regimen at this time to maintain control.

Dose increases should be made with the evening dose to minimize drowsiness.

When changing from IV to oral forms, dose should remain consistent.

PO: Shake suspension before administration.

IV Administration

pH: 3.0–4.2.

Intermittent Infusion: Dilution: Use 100 mL of D5W, 0.9% NaCl, D5/0.9% NaCl, 5% sodium bicarbonate, or Ringer’s solution. Concentration: 10 mg/mL. Rate: Infuse slowly over 30–60 min.

Y-Site Compatibility: alemtuzumab, alfentanil, amikacin, aminophylline, anidulafungin, argatroban, ascorbic acid, atracurium, atropine, aztreonam, benztropine, bivalirudin, bleomycin, bumetanide, buprenorphine, butorphanol, calcium chloride, calcium gluconate, carmustine, cephalothin, cefazolin, cefotaxime, ceftriaxone, ceftazidime, cefuroxime, chlorpromazine, clindamycin, cyanocobalamin, cyclosporine, dactinomycin, daptomycin, dexamethasone, digoxin, diltiazem, dipyridamole, dibutylamine, dobutamine, diphenhydramine, doxorubicin, dexamethasone, dicyclanil, diltiazem, ephedrine, epinephrine, epoprostenol, esmolol, etoposide, etoposide phosphate, famotidine, fenoldopam, fentanyl, fluconazole, fludarabine, gemcitabine, gentamicin, glycopyrrolate, griseofulvin, hespan, histamine, hydroxyzine, hydroxyzine, ibuprofen, indomethacin, insulin, isoproterenol, labetalol, lidocaine, lorazepam, magnesium sulfate, marbucon, metoclopramide, metronidazole, midazolam, minoxidil, morphine, methyldopa, nalbuphine, naloxone, nitroglycerin, nitroprusside, nimodipine, norepinephrine, oxaliplatin, palonosetron, pancuronium, pamidronate, penicillin G, pentamidine, phenobarbital, phenylephrine, phentolamine, phentermine, piperacillin, potassium acetate, potassium chloride, procainamide, psyllium, promethazine, propranolol, promazine, povidone, ranitidine, sodium bicarbonate, streptomycin, succinylcholine, sulindac, tacrolimus, temsirolimus, tetrabenazine, theophylline, thiamine, thiotepa, ticarcillin, ticarcillin/clavulanate, tigecycline, tobramycin, tromethamine, trimethaphan, vancomycin, vecuronium, vasoressin, verapamil, vinorelbine, voriconazole, zoledronic acid.

Y-Site Incompatibility: acyclovir, amphotericin B colloidal, amphotericin B lipid complex, amrinone, aztreonam, chloramphenicol, clindamycin, diazepam, furosemide, flosequinan, ganciclovir, imipenem/cilastatin, indomethacin, inhaled nitric oxide, insulin, ketorolac, lidocaine, linezolid, lorazepam, magnesium sulfate, metronidazole, midazolam, minoxidil, morphine, methyldopa, nalbuphine, naloxone, nitroglycerin, nitroprusside, nimodipine, norepinephrine, oxaliplatin, palonosetron, pancuronium, penicillin G, pentamidine, phenobarbital, phenylephrine, phentolamine, phentermine, piperacillin, potassium acetate, potassium chloride, procainamide, psyllium, promethazine, propranolol, promazine, povidone, ranitidine, sodium bicarbonate, streptomycin, succinylcholine, sulindac, tacrolimus, temsirolimus, tetrabenazine, theophylline, thiamine, thiotepa, ticarcillin, ticarcillin/clavulanate, tigecycline, tobramycin, tromethamine, trimethaphan, vancomycin, vecuronium, vasoressin, verapamil, vinorelbine, voriconazole, zoledronic acid.

Patient/Family Teaching

Emphasize the importance of continuing to take this medication, even if feeling well. Instruct patient to take medication at the same time each day. Last dose of the day should be taken at bedtime. Take missed doses as soon as remembered but not almost time for next dose. Do not double doses.

Encourage patient to comply with additional interventions for hypertension (weight reduction, low-sodium diet, smoking cessation, moderation of alcohol consumption, regular exercise, and stress management). Multiple hypotensive agents do not cure hypertension.

Instruct patient and family on proper technique for monitoring BP. Allow them to check BP at least weekly and report significant changes.

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- Instruct patient to notify health care professional if fever, muscle aches, or flu-like syndrome occurs.
- Instruct patient that urine may darken or turn red-black when left standing.
- May cause drowsiness. Advise patient to avoid driving or other activities requiring alertness until response to medication is known. Drowsiness usually subsides after 7–10 days of continuous use.
- Caution patient to avoid rapid changes in position to decrease orthostatic hypotension.
- Advise patient that frequent mouth rinses, good oral hygiene, and sugarless gum or candy may minimize dry mouth. Notify health care professional if dry mouth continues for >2 wk.
- Caution patient to avoid concurrent use of alcohol or other CNS depressants.
- Advise patient to notify health care professional of all Rx or OTC medications, vitamins, or herbal products being taken and to consult with health care professional before taking other medications, especially cough, cold, or allergy remedies.
- Advise patient to notify health care professional of medication regimen before treatment or surgery.

Evaluation/Desired Outcomes
- Decrease in BP without appearance of side effects.

Why was this drug prescribed for your patient?