methylPREDNISolone (methyl-pred-niss-oh-lone)

A-Methapred, Depo-Medrol, Medrol, Solu-MEDROL

**Classification**  
Therapeutic: anti-inflammatories (steroidal), immunosuppressants  
Pharmacologic: corticosteroids

**Pregnancy Category C**

**Indications**  

**Action**  
Suppresses inflammation and the normal immune response. Has numerous intense undesirable effects (see Adverse Reactions and Side Effects). Suppresses adrenal function at chronic doses of 4 mg/day. Has negligible mineralocorticoid activity.

**Pharmacokinetics**  
**Absorption:** Well absorbed after oral administration. Succinate salt is rapidly absorbed after IM administration. Acetate salt is slowly but completely absorbed after IM administration. Absorption from local sites (intra-articular, intralesional) is slow but complete.

**Distribution:** Widely distributed; crosses the placenta, and probably enters breast milk.

**Metabolism and Excretion:** Metabolized mostly by the liver.

**Half-Life:** 3.5 hr (plasma), 18–36 hr (tissue); adrenal suppression lasts 1.25–1.5 days.

**TIME/ACTION PROFILE (anti-inflammatory activity)**

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO</td>
<td>unknown</td>
<td>1–2 hr</td>
<td>1.25–1.5 days</td>
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<tr>
<td>IM (acetate)</td>
<td>6–48 hr</td>
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<td>rapid</td>
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**Contraindications/Precautions**  
Contraindicated in: Active untreated infections (may be used in patients being treated for tuberculosis meningitis); Lactation: Avoid chronic use; Known alcohol, bisulfite, or tartrazine hypersensitivity or intolerance (some products contain these and should be avoided in susceptible patients); Administration of live virus vaccines.

**Use Cautiously in:** Chronic treatment (will lead to adrenal suppression; use lowest possible dose for shortest period of time); Pedi: Chronic use will result in growth; Pediatric use in children only; hypertension, diabetes; OB: Safety not established; Neonates (avoid use of benzyl alcohol containing steroidal preparations, use preservative-free formulations).

**Adverse Reactions/Side Effects**  
Adverse reactions/side effects are much more common with high-dose/long-term therapy. CNS: dizziness, syncope, headache, intracranial pressure (children only), mental depression, euphoria, personality changes, psychoses, restlessness.

EENT: cataracts, intraocular pressure.

CV: hypertension.

GI: peptic ulceration, anorexia, nausea, vomiting.

Derm: acne, pruritus, edema, fluid retention, weight gain, weight loss, muscle wasting, osteoporosis, avascular necrosis of joints, muscle pain, increased susceptibility to infections, susceptibility to infections.

Interactions**  
Drug-Drug: Additive hypokalemia with thiazide and loop diuretics, amphotericin B, piperacillin, or ticarcillin. Hypokalemia may increase the risk of digoxin toxicity. May increase requirement for insulin or oral hypoglycemic agents. Phenytoin, phenobarbital, and rifampin stimulate metabolism; may decrease effectiveness of oral contraceptives. Oral contraceptives may increase emotionality, mental depression, risk of adverse GI effects with NSAIDs (including aspirin). At chronic doses that suppress adrenal function, may delay antibody response to vaccines.

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ture from fluoroquinolones.

Route/Dosage

PO (Adults): Multiple sclerosis—160 mg/day for 7 days, then 64 mg every other day for 1 mo. Other uses—2–60 mg/day as a single dose or 2–4 divided doses.

IM, IV (Adults): Daily dose: 30 mg/kg IV q 4–6 hr for 3 days, then 6 mg/kg IV every other day for 1 mo. Daily dose: 60 mg/day IV divided into 3 doses q 4–6 hr.

PO (Children): Anti-inflammatory/Immunosuppressive—0.5–1.7 mg/kg/day or 3–6 mg/m2/day divided into 3–4 divided doses.

IM, IV (Adults): Adjuvant therapy of Pneumocystis jirovecii pneumonia in AIDS patients: methylprednisolone sodium succinate—30 mg twice daily for 5 days, then 15 mg once daily for 10 days. Acute spinal cord injury: methylprednisolone sodium succinate—160 mg/day for 7 days, then 64 mg every other day for 1 mo. Adjunctive therapy of Guillain-Barré syndrome in ALS patients: methylprednisolone sodium succinate—15 mg/m2/day divided into 3 doses q 6–12 hr.

IM (Adults): Methylprednisolone acetate—40–120 mg daily, weekly, or every 2 wk.

IV Administration

pH: 3.5–7.0.

Direct IV: Reconstitute with provided solution (Act-O-Vials, Univials, ADD-Vantage vials) or 2 mL of bacteriostatic water (with benzyl alcohol) for injection.

NURSING IMPLICATIONS

Assessment

● Indicated for many conditions. Assess involved systems before and periodically during therapy.

● Assess patient for signs of adrenal insufficiency (hypotension, weight loss, weakness, nausea, vomiting, anorexia, lethargy, confusion, restlessness) before and periodically during therapy.

● Monitor intake and output ratios and daily weights. Observe patient for peripheral edema, steady weight gain, rales/crackles, or dyspnea. Notify health care profes-

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sionals if these occur.

● Monitor serum electrolytes and glucose. May cause hyperglycemia, especially in persons with diabetes. May cause hypokalemia. Patients on prolonged therapy should routinely have hematologic values, serum electrolytes, and serum and urine glucose evaluated. May WBC counts. May serum potassium and calcium and increase serum sodium concentrations.

Potential Nursing Diagnoses

● Disturbed body image (Side Effects)

Potential Nursing Diagnoses

● Disturbed body image (Side Effects)

Deficient knowledge, related to medication regimen (Patient/Family Teaching)

Implementation

● Do not confuse Solu-Medrol (methylprednisolone) with Solu-Cortef (hydrocortisone) or Depo-Medrol (methylprednisolone).

● If dose is ordered daily or every other day, administer in the morning to coincide with the body's normal secretion of cortisol.

● PO: Administer with meals to minimize GI irritation, do not administer with grape-

fruit juice.

● Tablets may be crushed and administered with food or fluids for patients with diffi-
culty swallowing.

● IM: Shake suspension well before drawing up. IM doses should not be admis-
tered when rapid effect is desirable. Do not administer at sites of infection or ulcer.

● IM (Adults): Methylprednisolone acetate—40–120 mg/day, weekly, or every 2 wk.

IV Administration

pH: 5.5–7.0.

Beneset IV: Reconstitution with prescribed solution (At 0.1 mg/mL, formula, ADD Van-
tage vials) or 2 mL of bacteriostatic water (with benzyl alcohol) for injection.

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methylPREDNISolone

**Intermittent/Continuous Infusion:**
- **Rate:**
  - Low dose (≤2 mg/kg or ≤25 mg/dose): give over 3–15 min.
  - Moderate dose (≤2 mg/kg or ≤25 mg/dose): give over 15–30 min.
  - High dose (15 mg/kg or ≤250 mg/dose): give over 30 min.

**Concentration:**
- Maximum of 125 mg/mL.
- Dilution:
  - May be diluted further in D5W, D5/0.9% NaCl, or D5/0.9% NaCl. If desired, further dilution may be made in 0.9% NaCl or D5W. 
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    - Low dose (≤2 mg/kg or ≤25 mg/dose): give over 3–15 min.
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**Y-Site Compatibility:**
- Intermittent/Continuous Infusion:
  - methylPREDNISolone

**Y-Site Incompatibility:**
- streptokinase, succinylcholine, sufentanil, tacrolimus, teniposide, theophylline, tolazoline, ranitidine, remifentanil, rituximab, sodium acetate, sodium bicarbonate, tazobactam, potassium acetate, procainamide, prochlorperazine, propranolol, pemetrexed, penicillin G, pantoprazole, papaverine, pentamidine, pentazocine, phenytoin, phenylephrine, piperacillin, octreotide, oxaliplatin, oxytocin, pamidronate, pancuronium, papaverine, ranitidine, suvorexstat, shantam, tilmicosin, valdecoxib, valproate, vecuronium, verapamil, vincristine, vorelaxin.

**Patient/Family Teaching**

- **Instruct patient on correct technique of medication administration:**
- **Advise patient to take medication as directed.** Take missed doses as soon as remembered unless almost time for next dose. Do not double doses.

- **Storing the medication:** Avoid exposing the medication to direct sunlight. Do not freeze. Store at room temperature.

- **Discontinued.**
Explain need for continued medical follow-up to assess effectiveness and possible side effects of medication. Periodic lab tests and eye exams may be needed.

Long-term Therapy: Encourage patient to eat a diet high in protein, calcium, and potassium, and low in sodium and carbohydrates. Alcohol should be avoided during therapy.

Evaluation/Desired Outcomes
- Decrease in presenting symptoms with minimal systemic side effects.
- Suppression of the inflammatory and immune responses in autoimmune disorders, allergic reactions, and neoplasms.
- Management of symptoms in adrenal insufficiency.

Why was this drug prescribed for your patient?