**betamethasone (systemic)** (bay-ta-meth-a-sone)

- **Classification:** Therapeutic: anti-inflammatory (steroidal)
  Pharmacologic: corticosteroids

### Pregnancy Category C

#### Indications

Management of adrenocortical insufficiency; chronic use in other situations is limited because of minimal adrenal activity. Used systemically and locally in a wide variety of chronic diseases including: Inflammatory, Allergic, Hematologic, Neoplastic, Autoimmune disorders. Replacement therapy in adrenal insufficiency. Unlabeled Use: Short-term administration in high-risk mothers before delivery to prevent respiratory distress syndrome in the newborn.

#### Action

In pharmacologic doses, suppresses inflammation and the normal immune response. Has numerous intense metabolic effects (see Adverse Reactions and Side Effects). Suppressed adrenal function at chronic doses of 0.6 mg/day. Has negligible mineralocorticoid activity.

#### Therapeutic Effects:

- Suppression of inflammation and modification of the normal immune response.
- Replacement therapy in adrenal insufficiency.

#### Pharmacokinetics

- **Absorption:** Sodium phosphate 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); 56–74 hr (tissue); adrenal suppression lasts 3.25 days.

#### Contraindications/Precautions

- **Contraindicated in:** Active untreated infections (may be used in patients being treated for tuberculosis meningitis); Traumatic brain injury (high doses may result in mortality). Use Cautiously in:
  - Chronic treatment (will lead to adrenal suppression; use lowest possible dose for shortest period of time);
  - Hypothyroidism;
  - Cirrhosis;
  - Ulcerative colitis;
  - Stress (surgery, infections); supplemental doses may be needed. Potential interactions may mask signs (fever, inflammation);
  - OB: Safety not established;
  - Pedi: Chronic use will result in 
    - Growth; use lowest possible dose for shortest period of time.

#### Adverse Reactions/Side Effects

- Adverse reactions/side effects are much more common with high-dose/long-term therapy.
- **CNS:** Depression, euphoria, headache, intracranial pressure (children only), personality changes, psychoses, restlessness.
- **EENT:** Cataracts, intraocular pressure.
- **CV:** Hypertension.
- **GI:** Peptic ulceration, anorexia, nausea, vomiting.
- **Derm:** Acne, wound healing, ecchymoses, fragility, hirsutism, petechiae.
- **Endo:** Adrenal suppression, hyperglycemia.
- **F and E:** Fluid retention (long-term high doses), hypokalemia, hypokalemic alkalosis.
- **Hemat:** Thromboembolism, thrombophlebitis.
- **Metab:** Weight gain, weight loss, muscle pain.
- **Misc:** Cushingoid appearance (moon face, buffalo hump), susceptibility to infection.

#### Interactions

- **Drug-Drug:** Additive hypokalemia with thiazide and loop diuretics, or amphotericin B. Hypokalemia may cause digitalis glycoside toxicity. Use with discretion for insulin or oral hypoglycemic agents. Phenytoin, phenobarbital, and rifampin stimulate metabolism; may affect effectiveness. Oral contraceptives may block metabolism. Risk of adverse AS effects with NSAIDs (including aspirin). At chronic doses that suppress adrenal function, may impair antibody response to and risk of adverse reactions from live-virus vaccines.

#### 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>IM (sodium phosphate/acetate)</td>
<td>1–3 hr</td>
<td>unknown</td>
<td>1 wk</td>
</tr>
</tbody>
</table>

**Note:** Discontinued.
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Route/Dosage

**IN (Adults):** 0.5–9 mg/day as betamethasone sodium phosphate/acetate suspension in 1–2 divided doses. Prophylaxis of respiratory distress syndrome in newborns—12 mg/day for 2–5 days before delivery (unlabeled).

**IN (Children):** Adrenocortical insufficiency—17.5 mcg/kg (500 mcg/m²)/day in 2 divided doses every 12-hr or 5.8–8.75 mcg/kg (166–250 mcg/m²)/day as a single dose. Other uses—20.6–125 mcg/kg (625–375 mcg/m²) of the base q 12–24 hr.

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 professional if these occur.
- Pedi: Children should have periodic growth evaluations.
- Lab Test Considerations: Monitor serum electrolytes and glucose. May cause hyperglycemia, especially in persons with diabetes. May cause hypokalemia. Patients on prolonged courses of therapy should routinely have hematologic values, serum electrolytes, and serum glucose evaluated. May increase serum potassium and calcium, and serum sodium concentrations.
- May cause hypertrichosis. May cause decrease in thyroid μT4 or μT3.
- Monitor for infection (Side Effects)

Potential Nursing Diagnoses

- Disturbed body image (Side Effects)

Implementation

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

**Patient/Family Teaching**
- Stopping the medication suddenly may result in adrenal insufficiency (anorexia, nausea, weakness, fatigue, dyspnea, hypotension, hypoglycemia). If these signs appear, notify health care professional immediately. This can be life-threatening.
- Glucocorticoids cause immunosuppression and may mask signs of infection. Instruct patient to avoid people with known contagious illnesses and to report possible infections immediately.
- Instruct patient to avoid vaccinations without first consulting health care professional.
- Review side effects with patient. Instruct patient to inform health care professional if severe abdominal pain or tarry stools occur or if swelling in the hands or feet occur. Instruct patient to report unusual swelling, weight gain, rashes, or changes in behavior.
- Advise patient to notify health care professional of medication regimen before treatment or surgery.
- Discuss possible effects on body image. Explore coping mechanisms.
- Instruct patient to inform health care professional if symptoms of underlying disease return or worsen.
- Advise patient to carry identification describing disease process and medication regimen in the event of an emergency in which patient cannot relate medical history.
- Instruct patient to avoid vaccinations without first consulting health care professional. Instruct patient to avoid people with contagious illnesses.
- Advise patient to avoid all alcoholic beverages during therapy.
- Advise patient to take medication as directed. Do not make dosage changes without physician approval.
- Advise patient to eat a diet high in protein, carbohydrates, and potassium, and low in sodium and carbohydrates. Alcohol should be avoided during therapy.

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CONTINUED
betamethasone (systemic)

**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?