**dexamethasone** (dex-a-meth-a-sone)

**Dosage:** t.i.d.

**Classification:** Therapeutic: anti-inflammatories (steroidal)

**Pregnancy Category:** C

**Indications**

Used systemically and locally in a wide variety of chronic diseases including: Inflammatory, Allergic, Hematologic, Endocrine, Neoplastic, Dermatologic, Autoimmune disorders. Management of cerebral edema. Diagnostic agent in adrenal disorders.

**Unlabeled Use:** Short-term administration to high-risk mothers before delivery to prevent respiratory distress syndrome in the newborn. Adjunctive management of nausea and vomiting from chemotherapy. Treatment of airway edema prior to extubation. Used in neonates with bronchopulmonary dysplasia to facilitate ventilator weaning.

**Action**

In pharmacologic doses, suppresses inflammation and the normal immune response. Has numerous intense metabolic effects (see Adverse Reactions and Side Effects). Suppresses adrenal function at chronic doses of 0.75 mg/day. Has negligible mineralocorticoid activity.

**Therapeutic Effects:** Suppression of inflammation and modification of the normal immune response.

**Pharmacokinetics**

**Absorption:** Well absorbed after oral administration. Sodium phosphate salt is rapidly absorbed after IM administration. Absorption from local sites (intra-articular, intralesional) is slow but complete.

**Distribution:** Widely distributed, crosses the placenta, and appears to enter breast milk.

**Metabolism and Excretion:** Mostly metabolized by the liver.

**Half-life:** Low birth weight infants with BPD: 9.3 hr; Children 3 mo–16 yr: 4.3 hr; Adults: 3–4.5 hr (plasma), 36–54 hr (tissue); adrenal suppression lasts 2.75 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>72 hr</td>
</tr>
<tr>
<td>IM, IV (phosphate)</td>
<td>rapid</td>
<td>unknown</td>
<td>72 hr</td>
</tr>
</tbody>
</table>

**Contraindications/Precautions**

**Contraindicated in:** Active untreated infections (may be used in patients being treated for tuberculosis meningitis); Known alcohol or bisulfite hypersensitivity or intolerance (some products contain these and should be avoided in susceptible patients);

**Lactation:** Avoid chronic use.

**Use Cautiously in:** Chronic treatment (will lead to adrenal suppression; use lowest possible dose for shortest period of time); Stress (surgery, infections); supplemental doses may be needed; Potential infections (may mask signs).

**Ophthalmic:** Avoid chronic use.

**Adverse Reactions/Side Effects**

Adverse reactions/side effects are much more common with high-dose/long-term therapy:

**CNS:** depression, euphoria, hallucinations, headache, increased intracranial pressure (children only), insomnia, personality changes, psychoses, restlessness.

**EENT:** cataracts, increased intraocular pressure.

**CV:** hypertension, edema.

**GI:** PEPTIC ULCERATION, anorexia, nausea, reduced appetite, vomiting.

**Derm:** acne, wound healing, ecchymoses, hirsutism, petechiae.

**Endo:** adrenal suppression, hyperglycemia.

**Fan and E:** amenorrhea, hypokalemia, alkalosis.

**Hemat:** THROMBOEMBOLISM, thromboembolitis.

**Metab:** weight gain.

**MS:** muscle wasting, osteoporosis, avascular necrosis of joints, muscle pain.

**Misc:** cushingoid appearance (moon face, buffalo hump), susceptibility to infection.

**Interactions**

**Drug-Drug:** Risk of hypokalemia with thiazide and loop diuretics, amphotericin B, piperacillin, or ticarcillin. Risk of digoxin toxicity. May ↑ requirement for insulin or oral hypoglycemic agents. May ↓ levels of digoxin and theophylline. May ↑ levels of oral contraceptives. May ↓ or ↓ risk of adverse reactions from live-virus vaccines. May ↑ or ↓ the effects of warfarin.

**Other:** May ↓ or ↓ risk of adverse effects with NSAIDs (including aspirin) and anticoagulants.

**Overdosage:** platelet aggregation and in vivo thrombosis.

**Gastrointestinal:** Gastric ulceration.

**Cardiovascular:** Hypertension.

**Central Nervous System:** Depression.

**Hematologic:** Thrombocytopenia.

**Skin:** Increased extracellular fluid accumulation.

**Pregnancy:** Category C (first trimester) or D (second and third trimester). Risk to fetus cannot be ruled out.

**Lactation:** Avoid chronic use.

**Pediatric Use:** Early postnatal administration of high doses can cause significant and persistent reductions in neuromotor and cognitive functioning; results in growth retardation. Use lowest possible dose for shortest period of time.

**Geriatric Use:** Use with caution; drugged patients are more susceptible to Cushing's syndrome.

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Route/Dosage
PO, IM, IV (Adults): Anti-inflammatory—0.75–9 mg daily in divided doses q 6–12 hr. Airway edema or extubation—0.5–2 mg/kg/day divided q 6 hr; begin 24 hr prior to extubation and continue for 24 hr post-extubation. Cerebral edema—10 mg IV, then 4 mg IM or 8 mg q 6 hr until maximal response achieved, then switch to PO regimen and taper over 5–7 days.
PO, IM, IV (Children): Anti-inflammatory—0.08–0.3 mg/kg/day or 2.5–10 mg/m2/day divided q 6–12 hr. Physiologic replacement—0.05–0.15 mg/kg/day or 0.15–0.3 mg/m2/day divided q 8–12 hr.

PO (Adults): Suppression test—1 mg at 11PM or 5 mg q 6 hr for 48 hr.
PO (Children): Cerebral edema—0.5–2 mg/kg/day divided q 6–12 hr for 5 days (not to exceed 10 mg/day); then taper over 1–6 wk. Electrolyte replacement—0.5 mg/kg/day divided q 6–12 hr for 4 days (start at time of first anabolic dose).

IV (Adults): Cerebral edema—0.5–20 mg given 15–30 min before treatment. Central edema—Loading dose—1–2 mg/kg followed by 0.5–1.5 mg/kg divided q 6–8 hr for 5 days (not to exceed 10 mg/day); then taper over 1–6 wk. Electrolyte replacement—0.5 mg/kg/day divided q 6–12 hr for 4 days (start at time of first anabolic dose).

PO (Adults): Cerebral edema—Unadolescent—0.1–0.2 mg/kg/24 hr; adolescents—Loading dose—1–2 mg/kg followed by 0.5–1 mg/kg divided q 6–12 hr for 2 days. Reversal of convulsions—0.5–1.5 mg iv or 0.5–1 mg/kg divided q 6–12 hr until maximal response achieved, then switch to PO regimen and taper over 5–7 days.

IV, PO (Adults): Chemotherapy induced emesis—10–20 mg given 15–30 min before each chemotherapy dose or 5 mg q 12 hr for 2 days or 20 mg PO 12 hr for 2 days. Cerebral edema—Loading dose—2 mg/kg/24 hr; PO 12 hr on days 2 and 3 or 1 mg/kg/24 hr; PO q 12 hr on days 4 and 5. Bacterial meningitis—0.6 mg/kg/day divided q 6 hr for 4 days; then taper over 1–6 wk. Cerebral edema—Loading dose—2 mg/kg/24 hr; PO q 12 hr for 2 days; then taper over 1–6 wk.

NURSING IMPLICATIONS
Assessment
- Indicated for many conditions. Assess involved systems before and periodically during therapy.
- Assess 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, electrolyte, or dyspnea. Notify physician or other health care professional if these occur.
- Children should have periodic evaluations of growth.
- Cerebral Edema: Assess for changes in level of consciousness and headache throughout therapy.
- May cause hypokalemia and hyperkalemia.
- May cause hypercalcemia.
- May cause elevated cholesterol and lipid values.
- May cause hypothyroidism.
- Impairs reactions to allergy skin tests.
- Periodic adrenal function tests may be ordered to assess degree of hypothalamic-pituitary-adrenal axis suppression in chronic and terminal therapy.
- Documented Suppression Test: To diagnose Cushing’s syndrome, obtain baseline overnight urine or 24-hr urine for cortisol or 17-OHCS, then begin 48-hr administration of dexamethasone. Second 24-hr urine for 17-OHCS is obtained after 24 hr of dexamethasone administration. Normal response is a decrease in cortisol or 17-OHCS concentrations; then begin 48-hr administration of dexamethasone. Second 24-hr urine for 17-OHCS is obtained after 24 hr of dexamethasone.

Potential Nursing Diagnoses
Risk for infection (Side Effects)
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.
- Periods of stress, such as surgery, may require supplemental systemic corticosteroids.
- PO: Administer with meals to minimize gastrointestinal irritation.
- Tablets may be crushed and administered with food, chocolate syrup, or fluids for patients with difficulty swallowing.
- Use calibrated measuring device to ensure accurate dosage of liquid forms.
- Do not dilute with other solutions or admix.
CONTD

**dexamethasone**

*Name*

**Y-Site Compatibility:**

- **Syringe Incompatibility:**
- **Syringe Compatibility:**
- **Intermittent Infusion:**
- **Direct IV:**

**pH:**

- **Diluent:**

**1 Administration**

- **Concentration:**
- **Rate:**

**2 Administration**

- **Concentration:**
- **Rate:**

**3 Administration**

- **Concentration:**
- **Rate:**

**4 Administration**

- **Concentration:**
- **Rate:**

**Genetic Implication.**

- **CAPITALS**

**Side Effects:**

- **Discuss possible effects on body image.**
- **Explore coping mechanisms.**

**Patient/Family Teaching**

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

**Instruct patient to avoid people with known contagious illnesses and to report possible infections immediately.**

- **Cautions:**
- **Instruct patient to avoid vaccinations without first consulting health care professional.**

**Adverse Effects:**

- **Avoid side effects with patient.**

**Drug Interactions:**

- **Avoid drug interactions.**

**Discontinue effects on body image.**

- **Explore coping mechanisms.**

- **Discontinue.**
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 emergency in which patient cannot relate medical history.

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.

**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 nephrotic syndrome.
- Decrease in intracranial pressure.
- Management of symptoms in adrenal insufficiency.

Why was this drug prescribed for your patient?