DESCRIPTION:
Dexamethasone sodium phosphate is a water-soluble inorganic ester of dexamethasone. It occurs as a white or slightly yellow crystalline powder, is odorless or has a slight odor of alcohol, is exceedingly hygroscopic and is freely soluble in water. Dexamethasone sodium phosphate is an adrenocortical steroid anti-inflammatory drug. Chemically, dexamethasone sodium phosphate is 9-Fluoro-11β,17,21-trihydroxy-16α-methylpregna-1,4-diene-3,20-dione 21-(dihydrogen phosphate) disodium salt and has the following structural formula:

\[
C_{22}H_{28}FNa_2O_8P
\]

Dexamethasone Sodium Phosphate Injection, USP is a sterile solution of dexamethasone sodium phosphate in Water for Injection for intravenous (IV), intramuscular (IM), intra-articular, soft-tissue or intraluminal use. Each mL contains dexamethasone sodium phosphate equivalent to dexamethasone phosphate 4 mg or dexamethasone 3.35 mg, benzy alcohol 10 mg added as preservative; sodium citrate dihydrate 11 mg; sodium sulfite 1 mg as an antioxidant; Water for Injection q.s. Citric acid and/or sodium hydroxide may have been added for pH adjustment (7.0-8.5). Air in the container is displaced by nitrogen.

CLINICAL PHARMACOLOGY:
Dexamethasone sodium phosphate has a rapid onset but short duration of action when compared with less soluble preparations. Because of this, it is suitable for the treatment of acute disorders responsive to adrenocortical steroid therapy. Naturally occurring glucocorticoids (hydrocortisone and cortisone), which also have salt-retaining properties, are used as replacement therapy in adrenocortical deficiency states. Their synthetic analogs, including dexamethasone, are primarily used for their potent anti-inflammatory effects in disorders of many organ systems. Glucocorticoids cause profound and varied metabolic effects. In addition, they modify the body’s immune responses to diverse stimuli.

INDICATIONS AND USAGE:
Intravenous or Intramuscular Injection
When oral therapy is not feasible and the strength, dosage form, and route of administration of the drug reasonably lend the preparation to the treatment of the condition, those products labeled for intravenous or intramuscular use are indicated as follows:

- **Endocrine Disorders**
  - Primary or secondary adrenocortical insufficiency (hypercortisolism or cortisol is the drug of choice; synthetic analogs may be used in conjunction with mineralocorticoids where applicable; in infancy, mineralocorticoid supplementation is of particular importance).
  - Acute adrenocortical insufficiency (hydrocortisone or cortisone is the drug of choice; mineralocorticoid supplementation may be necessary, particularly when synthetic analogs are used).
  - Preoperatively; and in the event of serious trauma or illness, in patients with known adrenal insufficiency or when adrenocortical reserve is doubtful.
  - Shock unresponsive to conventional therapy if adrenocortical insufficiency exists or is suspected.

- **Congenital adrenal hyperplasia**

- **Non-suppressive thyroiditis**

- **Hypercalcemia associated with cancer**

- **Rheumatic Disorders**
  - As adjunctive therapy for short-term administration (to tide the patient over an acute episode or exacerbation) in:
    - Post-traumatic osteoarthritis
    - Synovitis of osteoarthritis
    - Rheumatoid arthritis, including juvenile rheumatoid arthritis (selected cases may require low-dose maintenance therapy)
    - Acute and subacute bursitis
    - Epicondylitis
    - Acute nonspecific tenosynovitis
    - Acute gouty arthritis
    - Psoriatic arthritis
    - Ankylosing spondylitis

- **Collagen Diseases**
  - During an exacerbation or as maintenance therapy in selected cases of:
    - Systemic lupus erythematosus
    - Acute rheumatic carditis

- **Dermatologic Diseases**
  - Pemphigus
  - Severe, atraumatic multiiforme (Stevens-Johnson syndrome)
  - Exfoliative dermatitis
  - Bullous dermatitis herpetiformis
  - Severe seborrheic dermatitis
  - Severe psoriasis
  - Mycosis fungoides

- **Allergic States**
  - Control of severe or incapacitating allergic conditions intractable to adequate trials of conventional treatment in:
    - Bronchial asthma
    - Contact dermatitis
    - Atopic dermatitis
    - Serum sickness
    - Seasonal or perennial allergic rhinitis
    - Drug hypersensitivity reactions
    - Urticarial or anaphylactic reactions
    - Acute noninfectious laryngeal edema (epinephrine is the drug of first choice)

- **Ophthalmic Diseases**
  - Severe acute and chronic allergic and inflammatory processes involving the eye, such as:
    - Herpes zoster ophthalmicus
    - Iritis, iridocyclitis
    - Chorioretinitis
    - Diffuse posterior uveitis and choroiditis
    - Optic neuritis
    - Sympathetic ophthalmia
    - Anterior segment inflammation
    - Allergic conjunctivitis
    - Keratitis
    - Allergic corneal marginal ulcers

- **Gastrointestinal Diseases**
  - To tide the patient over a critical period of the disease in:
    - Ulcerative colitis (Systemic therapy)
    - Regional enteritis (Systemic therapy)

- **Respiratory Diseases**
  - Symptomatic sarcoidosis
  - Berylliosis
  - Pulmonary tuberculosis when used concurrently with appropriate antituberculous chemotherapy

- **Hematologic Disorders**
  - Acquired (autoimmune) hemolytic anemia
  - Idiopathic thrombocytopenic purpura in adults (IV only; IM administration is contraindicated)
  - Secondary thrombocytopenia in adults
  - Erythroid aplasia (erythropenia)
  - Congenital (erythroid) hypoplastic anemia

- **Neoplastic Diseases**
  - For palliative management of:
    - Leukemias and lymphomas in adults
    - Acute leukemia of childhood
  - Edematous States
    - To induce diuresis or remission of proteinuria in the nephrotic syndrome, without uremia, of the idiopathic type, or that due to lupus erythematosus
  - Miscellaneous
    - Tuberculous meningitis with subarachnoid block or impending block when used concurrently with appropriate antituberculous chemotherapy

- **Neurological Diseases**
  - Trichinosis with neurologic or myocardial involvement
  - Fulminating or disseminated pulmonary tuberculosis

- **Erythroblastopenia (RBC anemia)**
  - Acute leukemia of childhood
  - Leukemias and lymphomas in adults
  - Acquired (autoimmune) hemolytic anemia
  - Idiopathic thrombocytopenic purpura

- **Hypersensitivity reactions**
  - Localized hypersensitivity reactions
  - Drug reaction with eosinophilia and systemic Symptoms

- **Contraindications**
  - Systemic fungal infections (see Warnings regarding amphotericin B). Hypersensitivity to any component of this product, including sulfites (see WARNINGS).

- **WARNINGS**
  - Pregnancy
  - Nursing Mothers
  - Children
  - Geriatric Use
  - Patients with Infections or Neoplasms
  - Cataracts
  - Drug Interactions
  - Overdosage

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Dexamethasone Sodium Phosphate Injection, USP
WARNINGs: Because rare instances of anaphylactoid reactions have occurred in patients receiving parenteral corticosteroid therapy, appropriate precautionary measures should be taken prior to administration, especially when history of allergy to any drug. Anaphylactoid and hypersensitivity reactions have also been reported for dexamethasone sodium phosphate (see ADVERSE REACTIONS).

Dexamethasone sodium phosphate injection contains a preservative that may cause allergic-type reactions including anaphylactoid symptoms and respiratory tract symptoms (e.g., dyspnea and pruritus) following administration. Even in patients with a history of only mild sensitivity to preservatives, dexamethasone sodium phosphate injection should be administered with caution and, preferably, should be given directly from the vial, or it can be added to nonpreservative-containing solutions for administration. In the event of anaphylactoid reaction, discontinue the infusion and institute appropriate medical support measures. If prolonged use of corticosteroids is necessary, appropriate antimicrobial therapy should be confirmed, appropriate antimicrobial therapy should be instituted.

The prothrombin time should be checked frequently in patients who are receiving corticosteroids and coumarin anticoagulants at the same time because of reports that corticosteroids have altered the response to these anticoagulants. Studies have shown that the usual effect produced by adding corticosteroids is inhibition of response to coumarins, although there have been some conflicting reports of potentiation not substantiated by studies. When corticosteroids are administered concomitantly with potassium-depleting diuretics, increased requirements for potassium may be anticipated. When large doses are given, some authorities advise that antacids be administered between meals to help prevent peptic ulcer.

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Intra-articular, intralesional, and soft tissue injections risk of overdosage in chronic cases. Prolonged therapy during acute episodes, while minimizing the risk of overdosage in cases of acute exacerbation of severe, life-threatening situations, however, administration in dosages exceeding the usual dosages may be justified and may be in multiples of the oral dosages. The slower rate of absorption by intramuscular administration should be recognized.

When the drug is to be stopped after more than a few days of treatment, it usually should be withdrawn gradually. When the intravenous route of administration is used, dosage usually should be the same as the oral dosage. In certain overwhelming, acute, life-threatening situations, however, administration in dosages exceeding the usual dosages may be justified and may be in multiples of the oral dosages. The slower rate of absorption by intramuscular administration should be recognized.

**Shock**

There is a tendency in current medical practice to use high (pharmacologic) doses of corticosteroids for the treatment of unresponsive shock. The following dosages of dexamethasone sodium phosphate injection have been suggested by various authors:

**Author** | **Dosage**
--- | ---
Cavanagh<sup>1</sup> | 3 mg/kg of body weight per 24 hours by constant intravenous infusion after an initial intravenous injection of 20 mg
Dietzman<sup>2</sup> | 2 to 6 mg/kg of body weight as a single intravenous injection
Frank<sup>3</sup> | 40 mg initially followed by repeat intravenous injection every 4 to 6 hours while shock persists
Oaks<sup>4</sup> | 40 mg initially followed by repeat intravenous injection every 2 to 6 hours while shock persists
Schumer<sup>5</sup> | 1 mg/kg of body weight as a single intravenous injection

Administration of high dose corticosteroid therapy should be continued only until the patient’s condition has stabilized and usually not longer than 48 to 72 hours. Although adverse reactions associated with high dose, short term corticosteroid therapy are uncommon, peptic ulceration may occur.

**Cerebral Edema**

Dexamethasone sodium phosphate injection is generally administered initially in a dosage of 10 mg intravenously followed by four mg every six hours intramuscularly until the symptoms of cerebral edema subsides. Response is usually noted within 12 to 24 hours and dosage may be reduced after two to four days and gradually discontinued over a period of five to seven days. For palliative management of patients with recurrent or inoperable brain tumors, maintenance therapy with two mg two or three times a day may be effective.

**Acute Allergic Disorders**

In acute, self-limited allergic disorders or acute exacerbations of chronic allergic disorders, the following dosage schedule combining parenteral and oral therapy is suggested:

- **Intra-articular, Intralesional and Soft Tissue Injection:**
  - Intra-articular, intralesional, and soft tissue injections are generally employed when the affected joints or areas are limited to one or two sites. Dosage and frequency of injection varies depending on the condition and the site of injection. The usual dose is from 0.2 to 6 mg. The frequency usually ranges from once every three to five days to once every three to seven weeks. Frequent intra-articular injection may result in damage to joint tissues.
  - Some of the usual single doses are:

<table>
<thead>
<tr>
<th>Site of Injection</th>
<th>Amount of Dexamethasone Phosphate (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Joints (e.g., Knee)</td>
<td>2 to 4</td>
</tr>
<tr>
<td>Small Joints (e.g., Interphalangeal, Temporomandibular)</td>
<td>0.8 to 1</td>
</tr>
<tr>
<td>Bursae</td>
<td>2 to 3</td>
</tr>
<tr>
<td>Tendon Sheaths</td>
<td>0.4 to 1</td>
</tr>
<tr>
<td>Soft Tissue Infiltration</td>
<td>2 to 6</td>
</tr>
<tr>
<td>Ganglia</td>
<td>1 to 2</td>
</tr>
</tbody>
</table>

Dexamethasone sodium phosphate injection is particularly recommended for use in conjunction with one of the less soluble, longer-acting steroids for intra-articular and soft tissue injections.

**REFERENCES:**