Dextrose (dex-trose)

Glucose, Glucose, Intravenous, Hypoglycemia, Intravenous, Hypoglycemia, Insulin Reaction

Classification
Therapeutic: caloric sources
Pharmacologic: carbohydrates

Pregnancy Category: C

Indications
IV: Lower concentration (2.5–11.5%) injection provides hydration and calories. Higher concentrations (up to 70%) treat hypoglycemia and in combination with amino acids provide calories for parenteral nutrition. 50%—treatment of hypoglycemia (hyperinsulinemia or insulin shock). PO: Corrects hypoglycemia in conscious patients.

Action

Pharmacokinetics
Absorption: Well absorbed following oral administration.
Distribution: Widely distributed and rapidly utilized.
Metabolism and Excretion: Metabolized to carbon dioxide and water. When renal threshold is exceeded, dextrose is excreted unchanged by the kidneys.
Half-life: Unknown.

TIME/ACTION PROFILE (effects on blood sugar in diabetic patients)

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<td>IV</td>
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Contraindications/Precautions
Contraindicated in: Allergy to corn or corn products; Hypertonic solution (5%) should not be given to patients with CNS bleeding or anuria or who are at risk of dehydration.

Use Cautiously: in known diabetic patients (frequent lab assessment necessary to quantitate appropriate doses). Neutropenic (including rigid infusion of solutions >10% may result in intracranial hemorrhage). (Dextrose alcoholics or severely malnourished patients (administration requires initial pretreatment with thiamine).

Adverse Reactions/Geriatric Medications

Interactions
Drug: Drug: Will alter requirements for insulin or oral hypoglycemic agents in diabetic patients.

Route/Dosage
Hydration (as 5% solution)
IV (Adults and Children): 0.5–0.8 g/kg/hr.
Hypoglycemia
PO (Adults): 50–100 mg/kg/day divided q 3–4 hr.
PO (Adults): 20–50 mL of 50% solution infused slowly (3 mL/min).
Infants ＞6 mo and Children (as 25% dextrose): 50% (maximum of 25 g/dose) (as 25% dextrose).
IV (Infants <6 mo and Neonates): 0.25–0.50 g/kg/hr (maximum of 25 g/dose) (as 25% dextrose).

Nursing Implications
Assessment
● Assess the hydration status of patients receiving IV dextrose. Monitor intake and output and electrolyte concentrations. Assess patient for dehydration or edema.
● Assess nutritional status, function of gastrointestinal tract, and caloric needs of patient.
● Diabetic patients and patients receiving hypertonic dextrose solutions (>5%) should have serum glucose, potassium, and phosphate monitored regularly.
● Monitor IV site frequently for phlebitis and infection.

Labor Test Considerations: May cause a ↑ serum glucose level.

- Cautions: Drug: Cautions: Sensitivity reactions indicate most frequent.
- Discontinued: Drug: Discontinued.
Potential Nursing Diagnoses
Deficient fluid volume (Indications)
Imbalanced nutrition: less than body requirements (Indications)
Excess fluid volume (Adverse Reactions)

Implementation
- Dextrose solution alone does not contain enough calories to sustain an individual for a prolonged period. Dextrose contains 3.4 kcal/g, D5W contains 170 cal/liter and D10W contains 340 cal/liter.
- PO: Concentrated dextrose gels and chewable tablets may be used in the treatment of hypoglycemia in conscious patients. The dose should be repeated if symptoms persist and serum glucose has not increased by at least 20 mg/dL within 20 min. May be followed by more complex carbohydrates.
- IV: Hypertonic dextrose solution (>10%) should be administered IV into a central vein. For conscious treatment of hypoglycemia, administer slowly into a large peripheral vein to prevent phlebitis or sclerosis of the vein. Assess IV site frequently. Rapid administration may cause hyperglycemia or fluid shifts. When hypertonic solution is discontinued, taper solution and administer D5W or D10W to prevent rebound hypoglycemia.
- Patients requiring prolonged infusions of dextrose should have electrolytes added to the dextrose solution to prevent water intoxication and maintain fluid and electrolyte balance.

Additive Incompatibility: whole blood.

Patient/Family Teaching
- Explain the purpose of dextrose administration to patient.
- Instruct diabetic patient on the correct method for self-blood glucose monitoring.
- Advise patient on when and how to administer dextrose products for hypoglycemia.

Evaluation/Desired Outcomes
- Correction and maintenance of adequate hydration status and normal serum glucose levels.
- Maintenance of adequate caloric intake.

Why was this drug prescribed for your patient?