



## EMS System for Metropolitan Oklahoma City and Tulsa 2017 Medical Control Board Treatment Protocols



Approved 11/9/16, Effective 2/1/17, replaces all prior versions

### 16H DEXTROSE (50% as D50; 25% as D25; 10% as D10)

EMT-INTERMEDIATE 85

ADVANCED EMT

PARAMEDIC

**Class:** Carbohydrate

**Actions/Pharmacodynamics:** Dextrose is the principal form of glucose (sugar) used by the body to create energy and support critical metabolic processes. Since serious brain injury can occur in prolonged hypoglycemia, the timely administration of glucose is essential in treating hypoglycemia (blood glucose < 50 mg/dL). Dextrose 50% IV is the treatment of choice for hypoglycemic patients of adult age or of pediatric age with weight at or exceeding 25 kg. Dextrose 25% IV is the treatment of choice for hypoglycemic patients of pediatric age with weight less than 25 kg. Dextrose 10% IVPB is the treatment of choice for hypoglycemic patients in which vascular access is limited to small gauge angiocatheters (smaller than 20 ga.) or in any other situations in which there is a higher risk for extravasation. The lower concentration of D10 results in less extravasation tissue damage than D50.

**Indications:** Respiratory Arrest (3A)  
Specific Cause of Cardiac Arrest (4I)  
Altered Mental Status (6B)  
Seizure (6D)  
Syncope (6E)  
Dystonic Reaction (6F)  
Behavioral Disorder (7A)  
Poisonings - General Management (8A)  
Dialysis -Related Issues (9E)  
Complications of Pregnancy (13D)  
For all listed situations, indication is hypoglycemia (blood glucose < 50 mg/dL).

**Contraindications:** Hyperglycemia (blood glucose > 100 mg/dL)  
Normoglycemia in the setting of suspected cerebral ischemia.

**Pharmacokinetics:** Onset with 60 seconds after IVP with peak effect and duration of action dependent upon degree and cause of hypoglycemia. Usually effective duration in excess of 30 minutes. Medical literature shows speed of hypoglycemia reversal to be near clinically equivalent when comparing D10 infusion wide open with D50 IVP.

**Side Effects:** Warmth, pain, or burning at the injection site. D50 extravasation can cause tissue necrosis (requiring skin graft surgery), phlebitis, sclerosis, or thrombosis at the injection site.



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### PROTOCOL 16H: Dextrose (50% as D50; 25% as D25; 10% as D10)

- Dosage:**
- Respiratory Arrest - Adult & Pediatric weight  $\geq$  25 kg (3A)**
  - Altered Mental Status - Adult & Pediatric weight  $\geq$  25 kg (6B)**
  - Seizure - Adult & Pediatric weight  $\geq$  25 kg (6D)**
  - Syncope - Adult & Pediatric weight  $\geq$  25 kg (6E)**
  - Dystonic Reaction - Adult & Pediatric weight  $\geq$  25 kg (6F)**
  - Behavioral Disorder - Adult & Pediatric weight  $\geq$  25 kg (7A)**
  - Dialysis -Related Issues - Adult & Pediatric weight  $\geq$  25 kg (9E)**
  - Complications of Pregnancy - Adult & Pediatric weight  $\geq$  25 kg (13D)**
  - For hypoglycemia (blood glucose  $<$  50 mg/dL):**
    - Dextrose 50% (D50) 1 mL/kg IVP up to 50 mL
    - Dextrose 10% (D10) 25 grams in 250mL of NS IVPB wide open up to 250mL
  
  - Respiratory Arrest - Pediatric weight  $<$  25 kg (3A)**
  - Altered Mental Status - Pediatric weight  $<$  25 kg (6B)**
  - Seizure - Pediatric weight  $<$  25 kg (6D)**
  - Syncope - Pediatric weight  $<$  25 kg (6E)**
  - Dystonic Reaction - Pediatric weight  $<$  25 kg (6F)**
  - Behavioral Disorder - Pediatric weight  $<$  25 kg (7A)**
  - Dialysis -Related Issues - Pediatric weight  $<$  25 kg (9E)**
  - For hypoglycemia (blood glucose  $<$  50 mg/dL)**
    - Dextrose 25% (D25) 2 mL/kg IVP up to 50 mL
    - Dextrose 10% (D10) 25 grams in 250mL of NS IVPB wide open up to 125mL
  
  - Specific Cause of Cardiac Arrest - Adult & Pediatric weight  $\geq$  25 kg (4I)**
    - Dextrose 50% (D50) 1 mL/kg IVP up to 50 mL
  
  - Specific Cause of Cardiac Arrest - Pediatric weight  $<$  25 kg (4I)**
    - Dextrose 25% (D25) 2 mL/kg IVP up to 50 mL

**How Supplied:** Prefilled syringes of D50 - 25 grams dextrose in 50 mL of water (0.5 gram/mL)  
Prefilled syringes of D25 - 2.5 grams dextrose in 10 mL of water (0.25 gram/mL)  
Prefilled syringe of D50 – 25 grams dextrose in 50 mL of water added to 250 mL bag of normal saline (0.1 gram/mL)

**Special Comments:** D50 should be administered using an infusing IV, **NOT** a saline lock. The tissue caustic nature of D50 can be decreased by performing a slow and non-forceful IV push through the side port of an IV line that is flowing with normal saline into the patient's vein. Because of the risk of extravasation and the consequences of local tissue damage from extravasation, neither D50 nor D25 should be administered through an external jugular IV. High concentrations of dextrose can lead to cerebral edema in younger/smaller pediatric patients, requiring 1:1 dilution of D50 with normal saline to make D25 or using prefilled D25. A repeat determination of blood glucose level is to be performed post D50, D25, or D10 administration.