NAPA COUNTY EMS AGENCY

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Neurologic

Symptomatic Hypoglycemia

TREATMENT GUIDELINE 9301

9301.1 DEFINITION

Low blood glucose (bG) < 60 mg/dl with signs and symptoms of hypoglycemia, (e.g. altered level of consciousness, tachycardia and diaphoresis).

9301. 2 SPECIAL CONSIDERATIONS

A. GCS < 15 or inappropriate appearance for age with unclear etiology, consider AEIOU-TIPS.

B. Consider indications for spinal immobilization precautions. Refer to Spinal Immobilization Guideline # 9003.

C. Consider Carbon Monoxide (CO) / Cyanide Toxicity Guideline # 9817.

D. If patient has heart failure (HF) or a history of HF and lungs are clear, administer D10% as below, but slow infusion rate to 50 mL increments followed by reassessment.

E. If patient has rales, crackles or wheezes, contact the base hospital for orders.

9301.3 TREATMENT

A. Provide appropriate airway management. Refer to Airway Management Guideline # 9002.

B. Check blood glucose level.

C. If <60mg/dl or un-measurable and patient is able to swallow glucose paste (i.e. patient is able to hold head upright, has a gag reflex, and can self-administer medication).

1. Administer glucose paste 15 mg PO.
2. Reassess bG after 15 minutes.
3. If hypoglycemia continues and patient is still able to swallow glucose paste, administer 1 additional dose.

D. If <60 mg/dl or un-measurable and patient is **NOT** able to swallow glucose paste for any reason (e.g. decreased level of consciousness, clenched jaw, etc.)

1. Establish IV.
2. Administer 25 g (entire 250 mL) of D10% IV bolus.

E. If <60 mg/dl or un-measurable and patient is **NOT** able to swallow glucose for any reason AND IV access cannot be achieved or patient is in extremis.

1. Establish IO – proximal humerus preferred. Refer to IO Infusion Guideline #9812.
2. For IO pain management in conscious patient, use 2% preservative free lidocaine.
3. Slowly administer lidocaine 40 mg IO over 2 minutes.
4. Flush with 10 mL NS.
5. If needed, slowly infuse an additional lidocaine 20 mg IO over 1 minute.
6. Administer 25 g (entire 250 mL) of D10% bolus. A pressure-infuser bag may be used.
7. If needed, administer additional lidocaine 20 mg IO.

F. Reassess bG after initial dose of D10% IV/IO or when signs and symptoms of hypoglycemia fully reverse. If bG >60 mg/dl; slow D10% to TKO to deliver remainder of calculated dose.

G. If hypoglycemia continues, administer additional D10% in 5 g (50 mL) increments at 5-10 minute intervals. Reassess bG level and mental status every 5 minutes after each increment.

***Glucagon is no longer the first line treatment for hypoglycemia in cases in which IV access is not available.*

***Glucagon ONLY works when liver has sufficient glycogen stores – the peak glucose level occurs in approximately 25 minutes.*

H. If necessary, use glucagon as follows:

1. Administer glucagon 1 mg IM.
2. Reassess bG and mental status after 20-25 minutes.
3. If hypoglycemia continues after 25 minutes of glucagon administration, consider glucose paste or D10% IO infusion.

I. Consider 12-lead ECG.

9301.4. TRANSPORT / REFUSAL

A. If patient becomes alert and oriented and refuses transport after administration of glucose, glucagon, or D10%, fully assess the need for ED evaluation. Patient must be competent and informed risks of recurrent hypoglycemia and its consequences when not treated.

B. Patient with any one of the following histories should be strongly encouraged to be transported to ED:

1. New onset of hypoglycemia with no history of diabetes;
2. Complaints of other pre-existed nature of illness followed by hypoglycemia;
3. Type II diabetes taking sulfonylureas including, but not limited to, Glucotrol, Micronase, Diabeta, and Diabinese (duration of action of sulfonylureas is 18-72 hours);
4. Hepatic or renal insufficiency.

C. Any patient with an IO needle must be transported to the hospital as paramedics are not trained to remove. Base hospital contact may be required to facilitate transport.

Seizures

TREATMENT GUIDELINE 9302

9302.1 DEFINITION

Seizures: A sudden episode of transient neurologic symptoms such as involuntary muscle movements, sensory disturbances and altered consciousness. DO NOT administer midazolam unless patient is actively seizing.

9302.2 TREATMENT

Treat only if patient is actively seizing - three (3) or more seizures in ≤ 5 minutes, two (2) or more sequential seizures without full recovery of consciousness between seizures or any one (1) seizure lasting ≥ 5 min.

A. Protect from injury, cooling measures if febrile.

B. Maintain open airway and assist ventilations as needed.

C. Establish IV NS TKO.

D. Blood glucose determination, if BS < 60 mg/dL or un-measurable:

   1. Administer D10% **0.5 g/kg up to 25 g** (5mL/kg) IV/IO; **or**
   2. If vascular access impossible, D10% IO.
   3. For smaller children, draw up desired volume into syringe and administer slow IV/IO push. Observe patient for improvement while dose is given.
   4. If signs and symptoms of hypoglycemia fully reverse, reassess bG. If > 60mg/dL; slow D10% to TKO to deliver remainder of calculated dose.
   5. If no improvement after five (5) minutes from initial D10% dose and bG remains < 60mg/dL; give additional D10% IV **0.5 g/kg up to 25 g** (5mL/kg).

E. For continued seizure activity: Adult (> 50kg)

   Midazolam (Versed).

   1. IV/IO: 2 mg, May repeat twice, q 5 minutes, to a MAX total dose of 6 mg; or
   2. IM/IN: 5 mg. May repeat once in 15 minutes.
   3. Contact base hospital if seizures continue after total midazolam dosing.

F. If respirations depressed, consider naloxone (Refer to ALOC/Syncope Guideline # 9301).

Acute Cerebrovascular Accident / Stroke

TREATMENT GUIDELINE 9303

9303.1 DEFINITION

Acute Cerebrovascular Accident (CVA) or Stroke: Sudden onset of weakness, paralysis, confusion, speech disturbances; may be associated with headache.

9303.2 TREATMENT

A. Maintain an open airway and administer oxygen to maintain oxygen saturations > 94% and not above 97%.

B. Perform a Cincinnati Stroke Assessment.

PREHOSPITAL CINCINNATI STROKE SCREEN / SCALE	
Facial Droop	Ask patient to smile or grimace. Symmetrical smile or face is normal. Asymmetry is abnormal.
Arm Weakness	Ask patient to close both eyes and extend both arms out straight, palms up, for ten (10) seconds. If both arms move the same or do not move, the test is normal. If one arm drifts downwards, the test is abnormal. Patient with arm weakness will tend to pronate (turn palms sideways or down).
Speech Abnormalities	Have the patient say, “The sky is blue in Napa County.” If the patient speaks without slurring, the test is normal. If the patient slurs words or is unable to speak, the test is abnormal.
If any one of these tests is abnormal and is a new finding, the Cincinnati Stroke Scale is abnormal and may indicate an acute stroke.	

C. Establish IV or IO NS TKO en-route.

D. Blood glucose determination.

1. If < 60mg/dl or un-measurable:
    a. Administer glucose paste 15gm, PO into oral mucosa if patient is able to hold head upright, has a gag reflex and can self-administer medication; **or**
    b. Administer D10% IV rapidly (wide-open) – infuse 25 g (entire 250 mL) IV/IO; **or**
    c. If IV access not possible and patient’s condition precludes administration of glucose paste, infuse D10% IO.
    d. If signs and symptoms of hypoglycemia fully reverse, reassess bG level. If > 60mg/dl; slow D10% to TKO to deliver remainder of calculated dose.
    e. If no improvement after five (5) minutes from initial D10% dose and bG level remains < 60mg/dl; give additional D10% in 5 g (50 mL) increments at 5-10 minute intervals. Reassess bG level and mental status every five (5) minutes after each increment.

E. Obtain 12-Lead ECG.

9303.3 DOCUMENTATION

A. A detailed history of the following factors will help expedite patient evaluation and possible therapy:

1. Exact time of onset of signs and symptoms. **This is the most crucial historical information needed**.
2. Age.
3. History of bleeding disorders.
4. Anticoagulant usage – Coumadin (warfarin) / Pradaxa (dabigatran).
5. Heparin, Lovenox, Integrelin within forty-eight (48) hours.
6. Surgery within the last two (2) months.
7. History of confirmed intracranial non-traumatic hemorrhage.
8. Seizure included with current symptoms.
9. History of current or recent head injury.

9303.4 CONSIDERATIONS

A. Transport to a CVA receiving center, if available.

B. Expedite transport if the interval from the onset of symptoms to arrival at receiving facility is expected to be six (6) hours or less.

C. If exact time of onset of symptoms is unclear, use last time patient known to be at baseline for time of onset.

D. Contact receiving facility as early as possible.

E. If possible**, bring a family member or other on-scene historian to the receiving facility**.

Rapid identification and transport of suspected stroke patients, along with a detailed history will help expedite patient evaluation at the receiving facility and make the widest range of possible treatment options available.