



Hypoglycemia (Technician-Paramedic) Protocol

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Preamble

Prolonged hypoglycemia may result in serious neurologic complications and death. Glucose and glucagon can be administered to correct hypoglycemia and prevent complications.

The use of glucagon is a treatment option that is not required for adoption of the hypoglycemia protocol. The Medical Director may choose to adopt the hypoglycemia protocol without glucagon as a treatment option.

Requirements

1. Fully licensed Technician-Paramedic.
2. Certification in hypoglycemia protocol by the Medical Director.
3. Certification in intravenous cannulation protocol by the Medical Director (if intravenous dextrose is an option).
4. Certification in administration of intramuscular (IM) medication by the Medical Director (if glucagon is a treatment option).

Indications

1. Signs and symptoms consistent with hypoglycemia.

and

2. Documented hypoglycemia (glucose <4 mmol/l).

Drug Doses and Frequencies

1. oral glucose paste
 - patient age less than 10 years: 25 grams
 - patient age 10 years or greater: 50 grams

2. intravenous dextrose
 - patient age less than 10 years: D25W* – 2 ml / kg IV(maximum of 50 ml)
 - patient age 10 years or greater: 50 ml D50W IV

*if D25W is not available, it can be prepared by diluting D50W 1:1 with sterile water

note: intravenous dextrose may be repeated once if serum glucose remains below 4 mmol/l after 5 minutes

3. intramuscular glucagon (if glucagon is a treatment option)
 - patient age less than 10 years or less than 20 kg: 0.5 mg IM
 - patient age greater than 10 years or more than 20 kg: 1 mg IM

Procedure

1. Perform patient assessment and record vital signs.
2. Determine the patient's serum glucose by glucometry.
3. Assess that patient meets criteria for this protocol.
4. If the patient has a normal level of consciousness and an intact gag reflex, glucose paste is administered.
5. If the patient has no intact gag reflex, an intravenous line is established and intravenous dextrose is administered.
 - if the EMS personnel is not certified in intravenous cannulation, place the patient in the recovery position and administer glucose in the dependent cheek
 - have suction ready in the event the patient regurgitates stomach contents
 - consideration: half the prescribed amount may be administered as an initial dose to patients with an altered level of consciousness or an absent gag; if there is no response, the second half may be administered after the initial half has been absorbed
6. If an intravenous line cannot be established within 3-4 minutes or the EMS personnel is not certified to do so, glucagon may be administered.

- glucagon is a treatment option only if the EMS personnel is certified in glucagon use and IM medication administration
7. If the patient is actively seizing, an intravenous line should be established (if certified to do so). Intravenous dextrose is then administered (if certified to do so).
- initiation of an intravenous line and intravenous dextrose is the preferred treatment option in this circumstance
 - intramuscular glucagon can be administered to a seizing patient if an intravenous line cannot be established
 - oral dextrose should not be administered to a seizing patient
 - EMS personnel should exercise caution when attempting an intravenous line or delivering an IM medication to a seizing patient
 - if advanced level providers are not locally available, a regional protocol must be in place to respond to patients with hypoglycemia who are not candidates for oral glucose paste
8. If the patient is still symptomatic 5 minutes following intravenous dextrose administration, repeat the blood glucose reading. If blood glucose remains <4 mmol/l, a second dose of oral glucose or intravenous dextrose can be administered.
- oral glucose can be given in this setting only if the patient is conscious and alert
 - a second dose of glucagon is not administered if there is no response to the first dose

Note:

prompt and rapid transportation to hospital is indicated for any patient with refractory or persistent hypoglycemia

Documentation Requirements

The following information must be documented on the patient care report form:

1. Patient's presenting signs and symptoms, including vital signs, level of consciousness, and gag reflex.
2. Initial blood glucose measurement.
3. Indications for protocol use.
4. Dose, formulation, route of administration, and time of dose(s) for therapeutic agent(s) used.
5. Repeat assessment, vital signs, and blood glucose measurement, as indicated.
6. Changes from baseline, if any, that occur during transport.

7. Signature and license number of EMS personnel performing any transfer of function skills.

Certification Requirements

1. Attend in-depth lectures on hypoglycemia and diabetes mellitus.
2. Demonstrate an understanding of the pathophysiology of diabetes mellitus.
3. Demonstrate an understanding of the pharmacology and mechanism of action of oral glucose, intramuscular glucagon (if a treatment option), and intravenous dextrose (if a treatment option).
4. Demonstrate competency in use of a glucometer.
5. Demonstrate competency in preparation of glucagon and delivery of intramuscular injections (if glucagon is a treatment option).
6. Pass a written examination.
7. Certification is by the Medical Director.

Recertification Requirements

1. Review class and recertification is done every 12 months.
2. A record will be kept to document all cases where this protocol is used.

Decertification

1. Decertification is at the discretion of the Medical Director or the Provincial Medical Director, Emergency Medical Services, Manitoba Health & Healthy Living.

Quality Assurance Requirements

1. Appropriate quality assurance policies must be in place. The Medical Director or designate must review all instances where this protocol is used. As a minimum, the following must be assessed:
 - i) appropriateness of implementation
 - ii) adherence to protocol

- iii) any deviation from the protocol
 - iv) corrective measures taken, if indicated
2. Yearly statistics for protocol use compiled and forwarded to Emergency Medical Services, Manitoba Health & Healthy Living.