

Seizure Management Protocol

revised October 2008



Preamble

A seizure is a paroxysmal alteration of brain function due to abnormal, disorganized discharge of neurons. Seizures can be classified as focal or generalized. Focal seizures may not result in an alternation of consciousness, whereas generalized seizures result in loss of consciousness.

Patient Categorization by Age

- age 0 to 9 years – refer to pediatric section
- age 10 to 15 years – refer to adolescent section
- age 16 years or greater – refer to adult section

Requirements

For adults and adolescent patients:

1. Fully licensed Technician-Paramedic

For pediatric patients:

1. Fully licensed Technician-Advanced Paramedic – for intravenous diazepam

For all patients:

2. Certification in seizure protocol by the Medical Director.
3. Certification in hypoglycemia protocol by the Medical Director.
4. Certification in intravenous protocol (if intravenous diazepam is an option) by the Medical Director.
5. Facility for locked storage of benzodiazepines consistent with controlled substance guidelines.

Indications

1. Patient who has a generalized seizure lasting longer than five (5) minutes.

Contraindications

1. Focal seizure with no alternation in consciousness.
2. Use of buccal lorazepam is contraindicated in pediatric patients.
 - pediatric patients are managed by Technician-Advanced Paramedic personnel using intravenous diazepam

Drug Dose and Frequency

1. diazepam

adult:

5 mg IV as an initial dose
repeat IV dose may be given q3mins
maximum total dose: 20 mg

adolescent:

2.5 mg IV as an initial dose
repeat IV dose may be given q3mins
maximum total dose: 10 mg

pediatric (for Technician-Advanced Paramedics only):

0.2 mg / kg IV as initial dose (max 2.5 mg as initial dose)
repeat IV dose may be given q3mins
maximum total dose: 5 mg

hold diazepam if seizure stops, maximum dose is reached, or there is evidence of respiratory depression

2. lorazepam

adult and adolescent:

2 mg intrabucally as an initial dose
repeat dose may be given q10-15mins
maximum total dose: 4 mg

pediatric:

not indicated in pediatric patient population

hold lorazepam if seizure stops, maximum dose is reached, or there is evidence of respiratory depression

Procedure

1. Perform patient assessment and record vital signs, level of consciousness, and oxygen saturation.
2. Assess that patient meets criteria for this protocol.
3. Ensure there are no contraindications to use of this protocol.
4. Initiate basic life support treatment measures, including supplemental oxygen.
 - these take precedence over management using this protocol
5. Establish intravenous line of normal saline, TKVO (if certified to do so and diazepam is a treatment option).
6. Check blood sugar using glucometer.
 - if hypoglycemic (blood sugar <4 mmol/l), treat as per hypoglycemia protocol.
7. If normoglycemic and seizures continue, administer diazepam or lorazepam via the appropriate route (dependent on certification).
8. Repeat assessment, including vital signs, level of consciousness, oxygen saturation, and effect of diazepam or lorazepam after each dose.

Note:

- Lorazepam and diazepam can cause respiratory depression, regardless of route of administration.
 - EMS personnel must be prepared to provide respiratory support
- Pulse oximetry should be used as an adjunct in monitoring and ventilation, but should **not** replace ongoing clinical assessment of the patient.

Documentation Requirements

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

1. Patient's presenting signs and symptoms, including vital signs and level of consciousness.
2. History of seizure, its features, and duration.
3. Indications for protocol use.
4. Dose and time(s) for each drug dose used, and resulting clinical effects.
5. Repeat assessment and vital signs, as indicated.
6. Changes from baseline, if any, that occur during treatment or transport.
7. Amount of diazepam or lorazepam discarded, if any.
8. Signature and license number of EMS personnel performing any transfer of function skills. A second signature is required from another crew member or health care staff, witnessing discarding of unused diazepam or lorazepam (if applicable).

Certification Requirements

1. Attend in-depth classes and lectures on seizures, their pathophysiology, and their management.
2. Demonstrate an understanding of the pharmacology, mechanism of action, and potential side effects of lorazepam or diazepam.
3. Pass a written examination.
4. 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.