

# Paramedic – Evidence Based Medicine (P-EBP) Program

## Paramedic CAT (Critically Appraised Topic) Worksheet

**Title:** Lorazepam as pre-hospital treatment for seizures

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### Clinical Scenario:

You and your partner are called to a woman seizing in a movie theater. Bystanders tell you that she began seizing about ten minutes ago and has since stopped seizing and started again twice. Current interventions would have you and your partner protect the airway, provide supportive care, and transport. Would the patient benefit from the addition of Lorazepam administration to that protocol?

### PICO (Population – Intervention – Comparison – Outcome) Question:

Would patients experiencing seizures benefit from the administration of lorazepam in a pre-hospital setting?

Population – Patients seizing in a pre-hospital setting

Intervention – Administration of lorazepam

Comparison – Current interventions

Outcome – Benefit to the patient

### Search Strategy:

#11 "Seizure OR Status Epilepticus OR Tonic-clonic OR epilepsy" AND #10 "Lorazepam OR Midazolam OR Diazepam OR Ativan OR Clonazepam" AND #7 "Emergency Medical Services OR Emergency Medical Technicians OR paramedic\* OR emergency medical technician\* OR prehospital OR pre-hospital OR "out of hospital" OR responder\* OR ambulance"



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## Search Outcome:

328

## Relevant Papers:

AUTHOR, DATE	POPULATION: SAMPLE CHARACTERISTICS	DESIGN (LOE)	OUTCOMES	RESULTS	STRENGTHS/ WEAKNESSES
Silbergleit, 2011	893 patients experiencing pre-hospital seizures	Randomized Controlled Trial, Level I	Termination of seizures before arrival at emergency department without the need for rescue therapy.  Time from study-box opening to termination of seizures.  Time from initiation of active-drug administration to termination of convulsions	Lorazepam - 63.4% Midazolam - 73.4%  Lorazepam - 7 minutes Midazolam - 5 minutes  Lorazepam - 2 minutes Midazolam - 3 minutes	The trial was double-blind, met its target sample size, and used adults and children.  The medications were given via different routes.
Allredge, 2001	205 adult subjects experiencing repetitive or prolonged seizures	Randomized Controlled Trial, Level I	Termination of seizures by arrival at emergency department.  Death at discharge	Lorazepam - 59.1% Diazepam - 42.6% Placebo - 21.1%  Lorazepam - 7.7% Diazepam - 4.5% Placebo - 15.7%	The trial was double-blind and overseen by an external advisory company.  The study was published in 2001, missed its target sample size by five, and only used adult



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					subjects.
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**Comments:** Although the information on Lorazepam itself is rather limited, there is more when other benzodiazepines, such as Diazepam or Midazolam are included, which may be worth looking into further.

**Consider:** With the administration of Lorazepam, or any benzodiazepine, the patient may be at risk for respiratory distress, potentially leading to a need for rescue therapy and possible endotracheal intubation.

**Clinical Bottom Line:** The evidence outlined above demonstrates that the addition of Lorazepam to the current PCP protocol for treating seizures would benefit the patient by effectively terminating the seizure. This way, paramedics would be able to actively intervene as opposed to only providing supportive care to improve patient outcomes.

## References:

Silbergleit R, Lowenstein D, Durkalski V, Conwit R; Neurological Emergency Treatment Trials (NETT) Investigators. RAMPART (Rapid Anticonvulsant Medication Prior to Arrival Trial): a double-blind randomized clinical trial of the efficacy of intramuscular midazolam versus intravenous lorazepam in the prehospital treatment of status epilepticus by paramedics. *Epilepsia*. 2011 Oct;52 Suppl 8(Suppl 8):45-7. doi: 10.1111/j.1528-1167.2011.03235.x. PMID: 21967361; PMCID: PMC3211107.



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Allredge BK, Gelb AM, Isaacs SM, Corry MD, Allen F, Ulrich S, Gottwald MD, O'Neil N, Neuhaus JM, Segal MR, Lowenstein DH. A comparison of lorazepam, diazepam, and placebo for the treatment of out-of-hospital status epilepticus. N Engl J Med. 2001 Aug 30;345(9):631-7. doi: 10.1056/NEJMoa002141. Erratum in: N Engl J Med 2001 Dec 20;345(25):1860. PMID: 11547716.

