

mobile view

Inclusion criteria:

- Patients > 1 month of age with:
 - Continuous or recurrent seizures lasting > 60 minutes -AND-
 - Located in ICU or ED care setting

Exclusion criteria:

- Patients presenting after a seizure that is now resolved (refer to other clinical pathway, if applicable):
 - Seizure: First, Non-Febrile
 - Seizure: Febrile

Appropriate initial management:

- Includes treatment with at least three adequately dosed anti-seizure medications:
 - At least one benzodiazepine-AND-
 - Loading doses of two additional anti-seizure medications

Seizure first aid / stabilization:

- Monitor airway, breathing, circulation
- Anticipate need for additional support
- Intubation
- Vasopressors
- · Initiate continuous EEG
- Continue timing and observation of seizure

Labs for consideration:

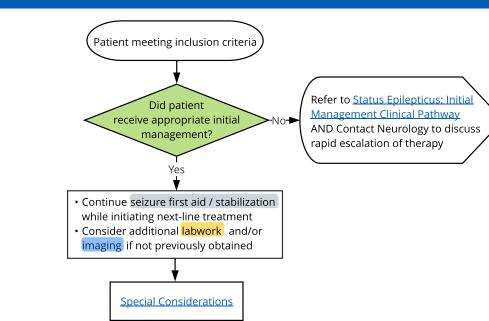
- CBC, BMP, ionized calcium, magnesium, POC glucose
- Hepatic function
- AED levels
- Complete toxicology screen
- · Infectious workup:
- Cultures (blood, urine, respiratory if indicated)
- Respiratory panel (RP) PCR
- Urinalysis for screening criteria, refer to <u>UTI Clinical Pathway</u>
- LP (cell count, culture, glucose, protein, HSV 1/2 PCR) especially if
 2 years, immunosuppressed, or recent antibiotic use

Imaging for consideration:

- MRI (seizure protocol)
- Non-contrast head CT *if MRI not available or concern for bleed*

Communication strategies:

- Ongoing conversation between ICU, Neurology and Epilepsy is required throughout dose escalation
- Attending to attending conversation should occur each morning after 1000 to discuss goals for the day
 - Primary attending to page Epilepsy
 Consult via web on call
- Provide frequent updates to parent/caregiver regarding treatment plan



Initiate IV Midazolam Bolus/Infusion

(diluted in NS if patient on ketogenic diet)

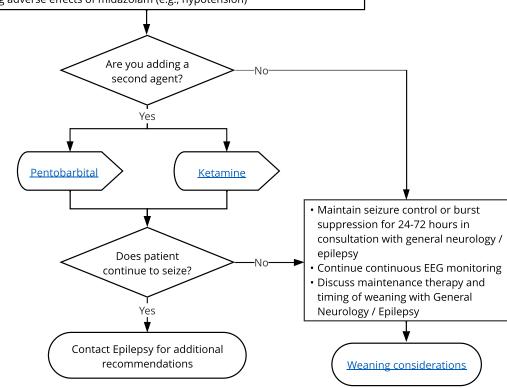
Loading dose: 0.2 mg/kg (max 10 mg) **Continuous IV infusion:** 0.2 mg/kg/hr

Titration: Increase infusion by 0.1 mg/kg/hr every **15 - 20 minutes**. Each increase should be preceded by a bolus of 0.1 - 0.2 mg/kg.

- Communication strategies
- Continue to escalate midazolam infusion until goals of therapy have been achieved or a secondary agent is initiated

Consider adding second agent when:

- Time: 4 hours and still escalating midazolam without adequate response
- Dose: 0.8 mg/kg/hr and still escalating midazolam without adequate response
- Usual upper dose threshold is 2 mg/kg/hr
- Increasing adverse effects of midazolam (e.g., hypotension)



Status Epilepticus: Refractory Management

Associated Power Plans: PICU Status Epilepticus



Inclusion criteria:

- Patients > 1 month of age with:
 - Continuous or recurrent seizures lasting > 60 minutes
 AND-
 - Located in ICU or ED care setting

Exclusion criteria:

- · Patients with liver failure
- Patients presenting after a seizure that is now resolved (refer to other clinical pathway, if applicable):
 - Seizure: First, Non-Febrile
 - <u>Seizure: Febrile</u>

Special considerations:

- Use with caution in patients < 1 year of age due to immaturity of liver and kidneys
- Use with caution in patients with renal dysfunction, as this may increase the risk of propylene glycol toxicity
- Avoid use in patients with liver failure; use with caution in patients with liver dysfunction
- Closely monitor for extravasation as drug may be irritant

Communication strategies:

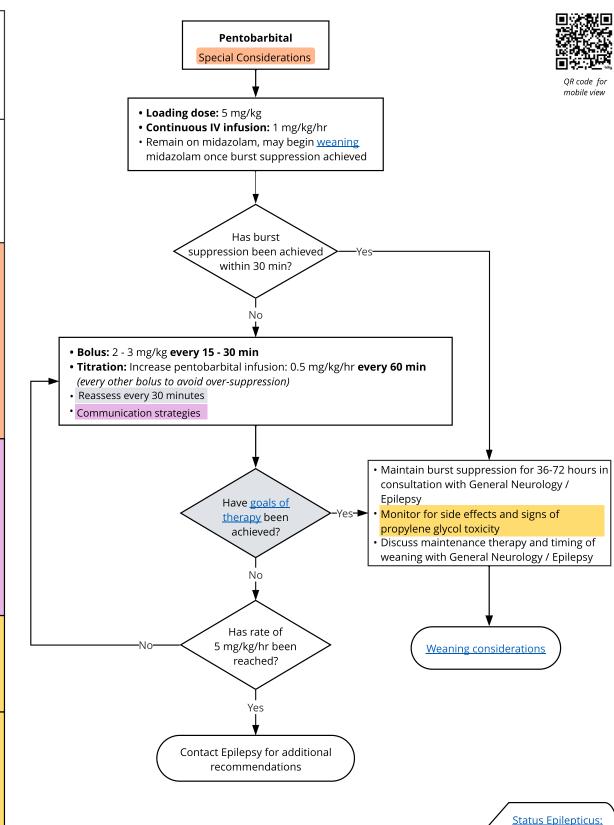
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Side effects:

- Hypotension
- Bradycardia
- Hypoventilation
- Respiratory depression
- Ileus

Signs of propylene glycol toxicity:

- Lactic acidosis
- · Acute renal failure
- Osmolar gap
- Arrhythmias
- Hemolysis
- · Refractory hypotension



Additional References

Almohaish, S., Tesoro, E. P., & Brophy, G. M. (2024). Status epilepticus: An update on pharmacological management. Semin Neurol, 44(3), 324-332. https://doi.org/10.1055/s-0044-1785503

Vasquez, A., Farias-Moeller, R., & Tatum, W. (2019). Pediatric refractory and super-refractory status epilepticus. Seizure, 68, 62-71. https://doi.org/10.1016/j.seizure.2018.05.012

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Link to synopsis and references

Last Updated: 03/14/2025

Refractory Management
Clinical Pathway

Status Epilepticus: Refractory Management

Associated Power Plans: PICU Status Epilepticus



Evidence Based Practice

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Special considerations:

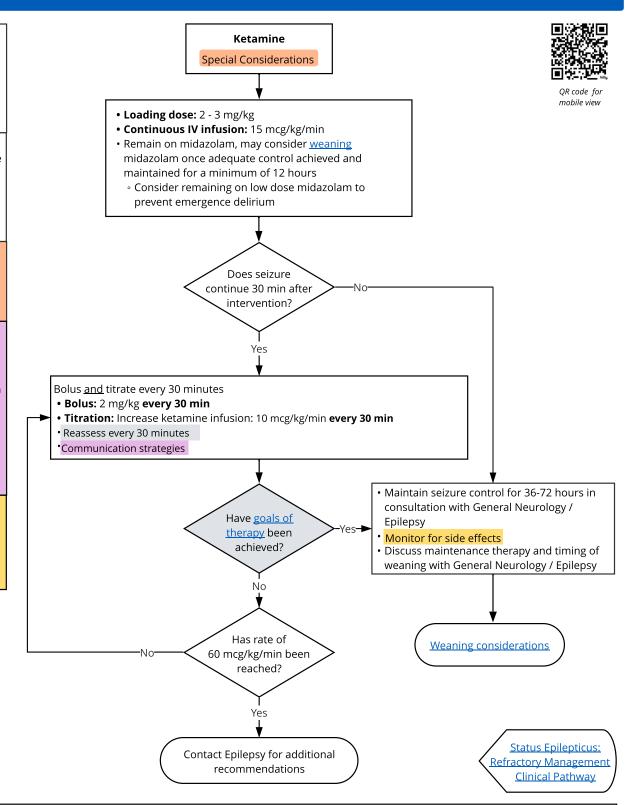
- Use with caution in patients with known or suspected heart failure
- Use with caution in patients with increased intracranial pressures

Communication strategies:

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Side effects:

- · Increased or decreased BP, HR
- Arrhythmia
- Respiratory depression
- Increased secretions
- Laryngospasm



Additional References

Fang, Y., & Wang, X. (2015). Ketamine for the treatment of refractory status epilepticus. Seizure, 30, 14-20. https://doi.org/10.1016/j.seizure.2015.05.010

Rosati, A., Ilvento, L., L'Erario, M., De Masi, S., Biggeri, A., Fabbro, G., Bianchi, R., Stoppa, F., Fusco, L., Pulitanò, S., Battaglia, D., Pettenazzo, A., Sartori, S., Biban, P., Fontana, E., Cesaroni, E., Mora, D., Costa, P., Meleleo, R.,...Guerrini, R. (2016). Efficacy of ketamine in refractory convulsive status epilepticus in children: A protocol for a sequential design, multicentre, randomised, controlled, open-label, non-profit trial (KETASER01). *BMJ Open, 6*(6), e011565.

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