



ပြည်ထောင်စုမြန်မာနိုင်ငံ၊ အထူးဒေသ(၁) ကျန်းမာရေးဌာန
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Neonatal Seizures

Standard Operating Procedure (SOP)



Union of Myanmar Special region - 1
Pediatric (SOP)

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Union of Myanmar Special region - 1
Pediatric (SOP)

Neonatal Seizures

Five Major Varieties of Seizures

- *Subtle*
- *Generalized tonic*
- *Multi focal clonic*
- *Focal clonic*
- *Myoclonic*

Immediate Questions

- *Is the infant really having seizures?*
- *Is there a history of birth asphyxia or risk factors for sepsis?*
- *What is the blood glucose level?*
- *How old is the infant?*

Diagnosis

A. History

- *Maternal history, including health, prenatal care and use of medications/drugs*
- *Family history of neonatal seizures*
- *Pregnancy: Take a detailed history for infections, including TORCH, drug use and medications*
- *Labor and delivery: Type and duration of delivery, presence of fetal monitoring. head trauma, need for resuscitation, Apgar scores*
- *Neonatal history: Birth weight, estimated gestational age at birth, feeding history*

B. Physical examination

1. *Thorough general physical examination*
 - *Vital signs*
 - *Dysmorphic features*
 - *Evidence of head or other body trauma*
 - *Skin lesions or discolorations*
 - *Head circumference*
2. *Fontanelle fullness: tense or bulging suggests meningitis*
3. *Neurological examination*
 - *Level of consciousness*
 - *Limb movement*

- *Muscle tone*
 - *Primitive reflexes*
 - *Cranial nerves examination*
4. *Notation of the seizure pattern*
- *Note types of movements, including limb and body involvement*
 - *Note duration and frequency of movements*
 - *Note whether movements occur during sleep or awake state*
 - *If the movements are arrested with limb restraint or provoked with tactile stimulation, they are likely to represent normal jitteriness or tremors*

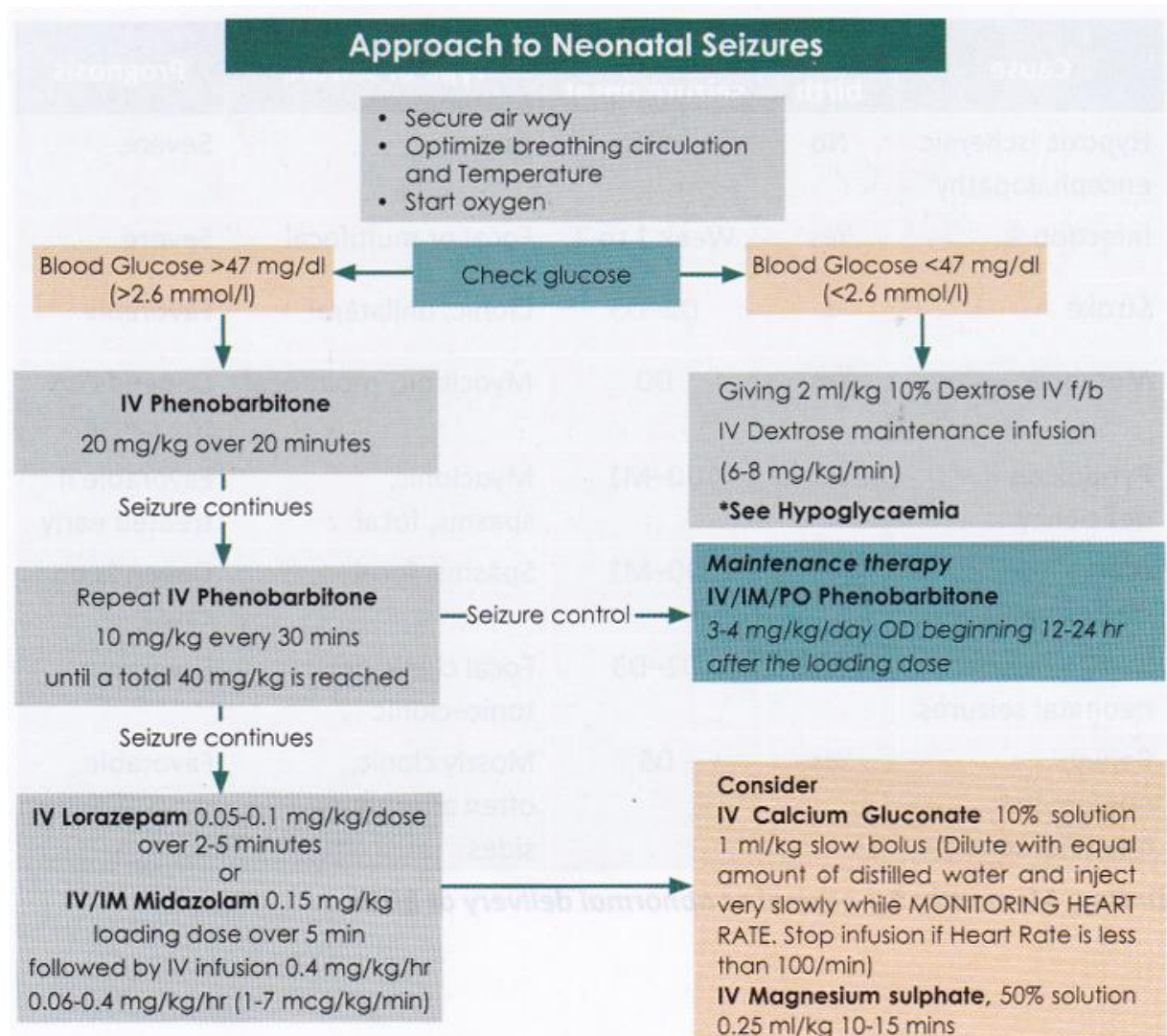
C. Investigations

1. *First line*
- *Pulse oximetry*
 - *Glucose*
 - *CBC and differential count-to rule out infection and polycythemia*
 - *Serum calcium (ionized if possible), sodium, magnesium*
 - *Arterial pH (if available)*
 - *Lumbar puncture, blood cultures (if indicated)*
 - *Cranial ultrasound scans (for exclusion of IVH in preterm or gross CNS malformations)*
 - *EEG (may provide confirmation that any observed neurological phenomena are seizures and inter-ictal EEG may be useful in estimating prognosis particularly in HIE)*
2. *Second line*
- *MRI or CT (Head)*
 - *Maternal and neonatal samples (urine/hair/meconium) for drugs of abuse*
 - *Specimen for virology and congenital infection*
 - *Serum ammonia and amino acids*
 - *Urinary amino acids and organic acids (If available)*
 - *Consider therapeutic trial of pyridoxine*

Medications: (See Page-17 Algorithm)

When to stop medication

- *In neonates with normal neurological examination and/or normal electroencephalography, consider stopping antiepileptic drugs if neonate has been seizure-free for >72 hours; the drug(s) should be reinstituted in case of recurrence of seizures.*
- *In neonates in whom seizure control is achieved with a single antiepileptic drug, the drug can be discontinued abruptly without any tapering of the doses.*
- *In neonates requiring more than one antiepileptic drug for seizure control, the drugs may be stopped one by one, with phenobarbital being the last drug to be withdrawn.*
- *If clinical examination is abnormal, consult with pediatric neurologist.*



*IV/IM Phenobarbitone; total dose-40 mg/kg

**IV Lorazepam if not respond after 10-15 mins, may repeat the dose; dilute with an equal volume of sterile water, normal saline, or 5% DW.

Table,1.4 Neonatal seizures: causes and prognosis

Cause	Normal birth	Time of seizure onset	Type of seizure	Prognosis
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<i>Hypoxic ischemic encephalopathy</i>	<i>No</i>	<i><D2</i>	<i>Any</i>	<i>Severe</i>
<i>Infection</i>	<i>Yes</i>	<i>Week 1 to 2</i>	<i>Focal or multifocal</i>	<i>Severe</i>
<i>Stroke</i>	<i>±</i>	<i>D2-D3</i>	<i>Clonic, unilateral</i>	<i>Favorable</i>
<i>Metabolic</i>	<i>Yes</i>	<i>D0</i>	<i>Myoclonic, multifocal</i>	<i>Depends on the cause</i>
<i>Pyridoxine deficiency</i>	<i>Yes</i>	<i>DO-M1</i>	<i>Myoclonic, spasms, focal</i>	<i>Favorable if treated early</i>
<i>Brain malformation</i>	<i>±</i>	<i>DO-M1</i>	<i>Spasms, focal</i>	<i>Depends on cause</i>
<i>Benign familial neonatal seizures</i>	<i>Yes</i>	<i>D2-D3</i>	<i>Focal clonic or tonic-clonic</i>	<i>Favorable</i>
<i>Benign nonfamilial neonatal seizures</i>	<i>Yes</i>	<i>D5</i>	<i>Mostly clonic, often alternating sides</i>	<i>Favorable</i>

D=Day; M=month; ± = normal or abnormal delivery at birth.