STANDARD TREATMENT WORKFLOW (STW)

Neonatal Seizures


1All India Institute Of Medical Science, New Delhi; 2Postgraduate Institute of Medical Education and Research, Chandigarh; 3Jawaharlal Institute of Postgraduate Medical Education & Research, Puducherry; 4All India Institute Of Medical Science, New Delhi; 5Maulana Azad Medical College (MAMC), New Delhi; 6ANCC, Ahmedabad; 7Nil Ratan Sircar Medical College and Hospital, Kolkata; 8Govt Hospital Nalgonda.Mother And Child Health Center, Nalgonda; 9Government Medical College & Hospital, Chandigarh; 10Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak; 11CH, Gurgaon; 12Stanley Medical College, Chennai; 13NIIT Ayog, New Delhi; 14All India Institute Of Medical Science, New Delhi; 15Madras Medical College, Chennai; 16SH, Mumbai; 17Sir Ganga Ram Hospital, New Delhi; 18All India Institute Of Medical Science, Jodhpur; 19Jawaharlal Institute of Postgraduate Medical Education & Research, Puducherry; 20Gandhi Medical College, Bhopal; 21All India Institute Of Medical Science, New Delhi; 22NCH, Aurangabad; 23KEM, Mumbai; 24Chettinad Hospital And Research Institute, Chennai; 25KEM Hospital, Pune; 26Tata Institute of Social Sciences, Mumbai; 27Postgraduate Institute of Medical Education and Research, Chandigarh; 28Maulana Azad Medical College (MAMC), New Delhi; 29Jawaharlal Institute of Postgraduate Medical Education & Research, Puducherry; 30Christian Medical College, Vellore; 31PCH, Hyderabad; 32Sri Ramakrishna Hospital, Coimbatore; 33Government Medical College & Hospital, Chandigarh; 34St John's Medical College Hospital, Bengaluru; 35Lady Hardinge Medical College, New Delhi; 36All India Institute of Medical Sciences, Bhubaneswar; 37Postgraduate Institute of Medical Education and Research, Chandigarh

CORRESPONDING AUTHOR
Dr. Ashok K Deorari, Department of Neonatology, All India Institute of Medical Science, New Delhi
Email: ashokdeorari_56@hotmail.com

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Standard Treatment Workflow (STW)

**NEONATAL SEIZURES**

**ICD-10-P90**

- Birth asphyxia
- Septic
- Meningitis
- Preterm
- Small for gestational age
- Metabolic or electrolyte abnormalities
- Major bleeding

**IDENTIFICATION OF SEIZURES**

- Motor manifestations
  - Rhythmic jerks of limbs or facial tics
  - Tonic contraction of limbs
  - Stereotyped movements of limbs, face, eyes
  - Limp: Pedalling, rolling, swimming, cyclic, stoppage
  - Oral: Rotating of lips, mouthing, repeated sucking
- Eyes: Vagile stare, transient eye deviation, nystagmoid movements, continued blinking

- Behavioral manifestations
  - Sudden change in consciousness or cry characteristic

- Autonomic manifestations
  - Fluctuations in heart rate, sudden change in BP, sudden appearance of unexplained apneic episodes

**HISTORY**

- Antenatal: First trimester viral illness, PIH, diabetes, PROM, chorioamnionitis, STDs, drug or substance abuse, decreased fetal movements

- Intrapartum: Fetal distress, difficult delivery, cord complications, mode of delivery, instrumental, postnatal: Resuscitation, other organ system involvement, leading history, Severe detai during and after delivery, description (reviewed videos)

- Family: Consanguinity, early neonatal deaths, mental retardation, epilepsy

**EXAMINATION**

- Vital signs: Temp., BP, HR, RR, CFT, SpO2
- General: pallor, icterus, rash, skin lesions
- Head to toe: Head circumference, bulging fontanelle, needle marks on scalp, dysmorphism, malformations, petechiae, ecchymoses
- Systemic: Level of alertness, cranial nerve and motor exam, examination of all systems, Fundus examination

**INVESTIGATIONS**

- In all neonates: Blood glucose, Serum electrolytes, hemoglobin, ionized calcium, blood urea, creatinine, liver function tests, blood gas analysis, cranial ultrasound
- Specific circumstances: Suspected sepsis: cerebrospinal fluid examination, Suspected TORCH infections: panel and baby serology for toxoplasmosis, CMV, HIV-1/2, body fluids for PCR ( urine for CMV, CSF for toxoplasmosis, CMV, HIV-1/2, Suspected intrauterine birth: Ultrasound or CT or MRI head, Platelet count and Coagulation profile
- Electromyography

**ACUTE MANAGEMENT OF SEIZURES**

- Goal of the treatment is the total or near total elimination of seizures. However, with higher doses and addition of more anti-epileptic drugs, the neonate requires intensive respiratory and cardiac monitoring. If recurrent seizures, isolated twitches may be just monitored

- If possible, measure ionized Calcium (Ca). If Ca <10 mmol/L, and seizures persist, repeat calcium dose

- If available, measure ionized Calcium (Ca). If Ca <10 mmol/L, and seizures persist, repeat calcium dose

- Ensure TAUCA IV access. Check blood glucose by Glucometer

- If IG < 4.5 mmol/L
  - Seizures persist
  - Phenytoin 20 mg/kg IV iv over 15 mins. If seizures persist after 15 min, consider another bolus of 10 mg/kg phenytoin over 30 mins. Assess seizure control after 30 min

- Seizures persist

- Phenytoin or Phenytoin 20 mg/kg PE: Intra over 20 min under cardiac monitoring. Assess seizure control after 30 min

- Seizures persist

- Give Lorazepam 0.05 mg/kg IV iv over 2.5 mins
  - Can repeat dose once, if seizures persist

- Midazolam 0.1 mg/kg IV bolus. Followed by continuous infusion (1 ug/kg/min) increasing by 0.5 to 1 ug/kg/min every 2 min unless a favorable response or max. 18 ug/kg/min

- Leviracetam 40 mg/kg IV bolus followed by 40-60 mg/kg/day IV in 4 or n in 2-3 divided doses

**DURATION OF ANTICONVULSANTS**

- Maintenance therapy is not needed in case of a single brief seizure that needs only one loading dose of phenobarbitone

- If more than one loading dose (OA) more than one drug is needed to control seizures – start the maintenance dose 24 h after the loading dose of the respective drugs. Prefer oral route if no contraindication

- After a seizure-free period of 72 h, stop all other anticonvulsants one by one, except phenobarbitone

- After one week or if G8 is full (after withdrawal is water), stop phenobarbitone if neurological examination and EEG are normal. If the neurological examination or EEG is abnormal (electrical seizure activity or a burst-suppression background), discharge on maintenance therapy

- Review at monthly intervals and taper anticonvulsants if neurological examination and EEG become normal

- Anticonvulsants are required beyond 3 months. Consult a neurologist and switch to other drugs

**REFERENCES**


**ADDITIONAL RESOURCES**


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