Neonatal seizures: Assessment and management

**Baby with suspected seizure activity**

**Observe and monitor:**
- Seizure activity
- Temperature, heart rate, respiratory rate & effort, BP, \(O_2\) saturation

  **Treat cardiorespiratory compromise**

**Assessment:**
- Review history (maternal, perinatal, family)
- Physical examination
- Neurological examination
- Investigate for underlying cause as required
  - Refer to flowchart: **Investigations**

**Management:**
- Treat underlying cause
  - Refer to other QCG guidelines
- Commence AEDs if seizures:
  - Duration > 3 minutes
  - More than 2 brief episodes
  - Detected on EEG
- Initiate ongoing communication with parent(s)
- Obtain advice from neonatologist as required

**Seizure activity**

**Can underlying cause be treated with immediate effect?**

- **Yes**
  - Treat underlying cause(s) as indicated:
    - Hypoglycaemia—Refer to QCG Newborn hypoglycaemia
    - Infection—Refer to QCG EOGBSD
    - HIE—Refer to QCG HIE

- **No**

  **Loading dose:** phenobarbital 20 mg/kg IV

  **Seizure activity ceased?**

  - **Yes**
  - **No**

**Treatment:**
- If seizures intractable within hours of birth & resistant to AEDs consider pyridoxine 50–100 mg IV
- Additional doses of phenobarbital:
  - 5–10 mg/kg IV (to total dose of 40 mg/kg)
- Second line drug:
  - Phenytoin 15-20 mg/kg IV
  - Midazolam 0.15 mg/kg IV
  - Levetiracetam 10 mg/kg IV twice per day
  - Topiramate 5 mg/kg orally
  - Clonazepam 100 micrograms/kg IV
  - Lignocaine 2 mg/kg IV and follow with IV infusion

**Maintenance therapy:**
- For difficult to control or prolonged seizures or abnormal EEG

**Consider ceasing AEDs if:**
- Seizures controlled and neurological examination normal OR
- Neurological examination abnormal but EEG normal

**Abbreviations:** AED: Anti-epileptic drug(s); BP: Blood pressure; EEG: Electroencephalogram; EOGBSD: Early onset Group B Streptococcal disease; HIE: Hypoxic ischaemic encephalopathy; IV: Intravenous; QCG: Queensland Clinical Guidelines