Investigations for neonatal seizures

**Initial screen**
- Consider suspected aetiology of seizure

**Pathology**
- Blood
  - BGL
  - Urea and electrolytes including Ca and Mg
  - FBC
  - LFT and TBR
  - Blood cultures
  - Blood gas for pH, lactate
  - NBST
  - TORCH screen

- CSF
  - If infection suspected
    - Microscopy and bacterial culture
    - PCR for bacterial and viral pathogens
  - Glucose
  - Protein, blood, colour

- Urine
  - If infection suspected
    - Microscopy and culture

**Imaging**
- Cranial USS (and/or MRI as advised by neonatalogist via RSQ)

**Subsequent investigations**
- Usually performed in tertiary facility after baby is retrieved
- Guided by specific clinical features of baby and expert advice (e.g. paediatric neurologist or metabolic specialist)

**Pathology**
- Blood
  - Ammonia
  - If metabolic or other genetic cause suspected:
    - Phenotyping as advised

- CSF
  - CSF amino acids
  - Neurotransmitters

- Urine
  - If metabolic cause suspected,
    - Amino acids
    - Organic acids
    - Alpha aminoadipic semialdehyde
    - CMV
    - Sulphites
    - Creatinine

**Congenital infection screen**
(In addition to initial TORCH)
- Varicella zoster
- Parvovirus B19

**Neurophysiology**
- EEG or aEEG (if available)

**Neuroimaging**
- MRI spectroscopy

**Underlying cause identified?**
- Yes
- No

**Treat underlying cause(s) as indicated**
- Hypoglycaemia—Refer to QCG Newborn hypoglycaemia
- Infection—Refer to QCG EOGBS
- HIE—Refer to QCG HIE
- Other

**Subsequent investigations as indicated and advised**

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aEEG: electroencephalogram, BGL: blood glucose level, CMV: cytomegalovirus, CSF: cerebrospinal fluid, EEG: electroencephalogram, EOGBS: early onset Group B Streptococcal disease, FBC: full blood count, HIE: hypoxic ischaemic encephalopathy, HSV: herpes simplex virus, LFT: liver function tests, MRI: magnetic resonance imaging, NBST: newborn bloodspot screening test, QCG: Queensland Clinical Guidelines, SpO2: peripheral capillary oxygen saturation, TBR: Total bilirubin, TORCH: toxoplasmosis, other (e.g. syphilis), rubella, cytomegalovirus, herpes simplex, USS: ultrasound scan