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Disclaimer

The wisdom provided in this clinical reference guide is for informational purposes only. The purpose of this guide is to promote a broad understanding and knowledge of SCN8A in an effort to support clinicians in the care of patients with this rare genetic disorder. It is not intended to be a substitute for published data, clinical practice guidelines, professional medical expertise, diagnosis, or treatment and is useful when corresponding published data are not otherwise available. Always seek the guidance of the contributing physicians with any questions you may have regarding treatment and before beginning a new health care regimen for your patient(s).

Due diligence in research for updates in SCN8A-related clinical information is expected before changing treatment course. Never disregard professional medical advice because of something you have read within this reference guide.

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Discover clinical wisdom about SCN8A Epilepsy from physicians with experience treating this rare disorder.

Learn more about the resources available for your patients with SCN8A Epilepsy.

SCN8A Epilepsy
Clinician Information & Reference Guide

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General Information

SCN8A mutation pathophysiology

- Most concentrated in neural tissue but also found in cardiac tissue
- SCN8A mutations lead to altered persistent sodium current (most commonly **UP**-regulation of sodium within the channel) and neuronal excitability.[1]

SCN8A mutation onset

- Age: mean 4 months (Range: birth through 6-years, N=98)[2]
- Seizure type varies
- EEG findings vary from normal or baseline slowing to infantile spasms with or without hypsarrhythmia

Treatment Plan

Drugs of choice

Sodium-channel blockers

- Use early and often at higher-than-standard doses
- Monitor for drug-efficacy AND toxicity
- Treat aggressively to achieve seizure freedom
- Seizure control may be related to prognosis
- Those with the best success rates at high dose:
    - Oxcarbazepine
    - Carbamazepine
    - Lamotrigine
    - Phenytoin
    - Lacosamide

Drugs to avoid

Levetiracetam (Keppra) has been shown to rapidly exacerbate seizure frequency and duration in a large proportion of the SCN8A mutation population (89% failure rate, 85% wean rate, N=72).[2]

Comorbidities

Consider the following consultations/referrals:

- **Gastroenterology:**
  G-tube dependency
- **Pulmonary:**
  Sleep apnea, Laryngomalacia
- **Orthopedic:**
  Scoliosis
- **Ophthalmology:**
  Cortical Visual Impairment
- **Cardiology** (with experience in channelopathies):
  Arrhythmias, Bradycardia
- **Physical/Occupational Therapy:**
  Hypotonia, Ataxia
- **Speech and Language Pathology:**
  Unsafe swallow, non-verbal

Monitoring

SUDEP

Genetic epilepsies have a higher risk of Sudden Unexpected/Unexplained Death in Epilepsy (SUDEP). SCN8A specifically may increase the risk of SUDEP due to increased susceptibility of arrhythmias.[3]

- Consider pulse oximetry in these patients due to potential for comorbid bradycardia and/or prolonged apneic events during seizures.
- Council parents to use on child during sleep.
- Encourage parents/caregivers to receive CPR certification

NOTE:

The presence of either sleep apnea or a bradycardia diagnosis (or both) will aid in insurance approval for pulse oximetry. Consider sleep study.

SCN8A EPILEPSY

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Genetic Testing

- Consider testing for genetic epilepsy (namely SCN8A) in any patients who have shown an adverse response to levetiracetam.
- Consider SCN8A testing for biological parents to determine de novo status versus possible inheritance patterns.
- Even in unaffected carriers of SCN8A genetic mutations or if a variant is considered non-pathogenic, consider cardiac work-up and regular follow-up.

Genetic Counseling

Most useful in the cases of inherited SCN8A mutations and/or when parents are considering future family planning.

Patients with SCN8A mutations are **NOT** to be treated like those with SCN1A mutations or Dravet Syndrome

References

1. American Epilepsy Society. “Mysteries of SCN8A mutation in epilepsy unraveled.” ScienceDaily. ScienceDaily, 6 December 2015. <www.sciencedaily.com/releases/2015/12/151206164755.htm>
2. SCN8A Families Support Group. Survey of SCN8A parents.
3. American Epilepsy Society. “Unraveling the Genetic Basis of Sudden Unexpected Death in Epilepsy.” https://www.aesnet.org/about_aes/press_releases/unravelinggeneticbasissudep