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# Roadmap to EEGs: video-based e-learning modules addressing clinical EEG reading

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# **Objectives**



- The *Epileptic Disorders Internship Program* team has developed a series of high-yield, up-to-date, free, 9-16-minute-long video-based learning modules ("*Roadmap to EEGs*").
- These modules address competencies related to interpreting EEG and describing common adult and pediatric EEG patterns (1.4), and diagnosing and classifying epilepsies and epilepsy syndromes using the most recent ILAE classifications (1.7).
- The series covers seven major topics in electroencephalography and epileptology (Figure 1).
- All videos are publicly available and readily accessible via the *Epileptic Disorders* website and the *Epileptic Disorders Internship Program* YouTube<sup>®</sup> channel.

# Roadmap to EEGs



#### Module 2A

### Normal variants: Part 1 (1.4.8)

- POSTS
- RMTD
- SSS
- Lambda waves
- Photic driving
- Wicket spikes
- Mu rhythm
- Ciganek rhythm

#### Module 3

#### EEG artifacts (1.4.8)

- Sweat
- EKG
- Eye blink
- Horizontal (lateral) eye movement
- Eye flutter
- Glossokinetic artifact
- Myogenic
- Patting

#### Module 5A

#### Focal Seizures: Part 1 (1.4.10; 1.7.3)

Basic principles of focal seizures

- Brief pattern qualifying as ictal
- Low voltage fast activity with evolving rhythm
- Focal electrodecrement seizure
- Left frontal seizure

#### Module 6

## Idiopathic generalized epilepsy<sup>2</sup> (1.4.10; 1.7.4)

- Childhood absence epilepsy
- Juvenile absence epilepsy

**Epilepsy with GTCA** 

- Juvenile myoclonic epilepsy

#### Module 7B

Developmental and Epileptic Encephalopathies: Part 2<sup>4</sup> (1.4.9; 1.4.10; 1.7.5)

Childhood onset (2-12 years of age)

- Lennox-Gastaut syndrome
- Landau-Kleffner syndrome

#### Module 1

#### **Normal EEG (1.4.7)**

- Wakefulness
- Drowsiness
- NREM sleep
- REM Sleep

#### Module 2B

#### Normal variants: Part 2 (1.4.8)

- Non-epileptiform sharp transients
- Posterior slow waves of youth
- Temporal slow of the elderly
- Slow fused transients
- Slow (notched) alpha variant
- 6 Hz SWs
- 14 and 6 Hz positive bursts

#### Module 4

6 IFCN criteria for defining an interictal epileptiform discharge<sup>1</sup> with examples of both IEDs and non-IEDs (1.4.9)

POSTS: positive occipital sharp transients of sleep RMTD: rhythmic mid-temporal theta of drowsiness SSS: small sharp spikes

IED: interictal epileptiform discharge IFCN: International Federation of Clinical Neurophysiology

IESS: infantile epileptic spasms syndrome

#### Module 5B

#### Focal Seizures: Part 2 (1.4.10; 1.7.3)

- Right occipital evolving seizure
- >2.5Hz SW

alone

- Right temporal seizure

#### EIDEE: early infantile developmental and epileptic encephalopathy EE-SWAS: epileptic encephalopathy with spike-wave activation in sleep SW: spike-wave GTCA: Generalized tonic-clonic seizure

#### Module 7A

Developmental and Epileptic Encephalopathies: Part 1<sup>3</sup> (1.4.9; 1.4.10; 1.7.5)

EEG and clinical hallmarks
Early infantile onset (<3 months of age)

- EIDEE infantile/neonatal onset
- IESS (West syndrome)
- Dravet syndrome

# Conclusion



- We encourage all learners to complete a pre- and post-test as this data will help us estimate learning outcomes and modify the modules accordingly in future revisions (please see the links below).
- We believe this e-learning series will allow junior trainees to acquire foundational knowledge in EEG/epilepsy, and senior trainees to review previously learned EEG/epilepsy information.
- We hope that our *Roadmap to EEGs* will help innumerable trainees across the globe achieve competency in EEG and epileptology.

#### Links:

- Link to pre-test/survey: <a href="https://www.surveymonkey.com/r/FPRXSTK">https://www.surveymonkey.com/r/FPRXSTK</a>
- Link to YouTube teaching modules: <a href="https://www.youtube.com/channel/UCn6x\_YRilGlt8S3f-ZnqGOg/videos">https://www.youtube.com/channel/UCn6x\_YRilGlt8S3f-ZnqGOg/videos</a>
- Link to post-test/survey: <a href="https://www.surveymonkey.com/r/PLB2MDV">https://www.surveymonkey.com/r/PLB2MDV</a>

# References



- 1. Kural MA, Duez L, Sejer Hansen V, Larsson PG. Criteria for defining interictal epileptiform discharges in EEG: A clinical validation study. Neurology. 2020 May 19;94(20):e2139-e2147.
- 2. Hirsch E et al. ILAE definition of the Idiopathic Generalized Epilepsy Syndromes: Position statement by the ILAE Task Force on Nosology and Definitions. Epilepsia 2022;00:1-25
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- 4. Specchio N et al. ILAE classification and definition of epilepsy syndromes with onset in childhood: position paper by the ILAE Task Force on Nosology and Definitions. Epilepsia. 2022;00:1-45