

Focus on Neonatal Neurological Disorders

Objectives

- Summarize the multiple aspects from pathophysiology to diagnosis, management, and potential outcomes for the range of neurological disorders that can potentially impact term and preterm neonates
- Discuss the role of conventional EEG (cEEG) and amplitude-integrated EEG (aEEG) in the care of neonates with confirmed or suspected seizures and describe the features of the EEG that provide information for appropriate interpretation of normal and abnormal states
- Explain the process for placement of EEG electrodes in the setting of neonatal EEG recording and identify the essential aspects of application and ongoing electrode checks as well as concerns that such technology presents to the family

Content Outline

1. Pathophysiology, Etiology, Diagnosis, Management & Prognosis of Neurological Problems in the Newborn
 - 1.1 Neonatal seizures
 - 1.2 Brain injury in preterm newborns
 - 1.3 Hypoxic-ischemic encephalopathy (HIE)
 - 1.4 Perinatal stroke
 - 1.5 Metabolic brain injury
 - 1.6 Central nervous system infections
 - 1.7 Hemorrhage and fractures secondary to trauma
2. Basic Overview of Neonatal EEG for Neonatal Healthcare Professionals
 - 2.1 Underlying neurophysiological processes of EEG
 - 2.2 Neuromonitoring of EEG in the NICU
 - 2.2.1 Conventional EEG (cEEG)
 - 2.2.2 Amplitude-integrated EEG (aEEG)
 - 2.3 Neonatal electrode placement for EEG and aEEG
 - 2.3.1 Preparation and technique of electrode application
 - 2.3.2 Determining sources of interference with EEG recording
 - 2.4 Analysis of EEG
 - 2.4.1 Frequency, amplitude, continuity
 - 2.4.2 Sleep-wake cycles
 - 2.5 Discussion of uses, guidelines, patient, and family bedside care implications

Reading Material Resources

Module WB2451: Focus on Neonatal Neurological Disorders is based on the resources listed below. A copy of each resource is included with the module.

Chapter 110 Neurological Problems in the Newborn, Garfinkle J and Miller SP, in *Bradley and Daroff's Neurology in Clinical Practice 8th Edition*, (2022), Elsevier, 2022-2039

An Introduction to Neonatal EEG, Ryan MA et al., *Journal of Perinatal Neonatal Nursing* 35, 4 (2021), 369-376