Stimulation may elicit abnormal electrical activity, which is recorded on the EEG. Various seizure types produce characteristic EEG patterns: high-voltage spike discharges are seen in tonic-clonic seizures with abnormal patterns in the intervals between seizures; a three-per-second spike and wave pattern is observed in an absence seizure; and absence of electrical activity in an area suggests a large lesion, such as an abscess or subdural collection of fluid.

A normal EEG does not rule out seizures. The EEG is only a surface recording, lasts approximately 1 hour, and therefore may show normal interictal activity. If there is concern about whether a child has seizures or the seizure type cannot be determined, then a long-term video EEG may be done to record the child during wakefulness and sleep. The full-body image is recorded on video, with selected EEG channels displayed on the same screen for simultaneous recording and viewing. Amplitude-integrated electroencephalography (aEEG) monitoring is increasingly available in neonatal and pediatric intensive care units. This is a method of continuous monitoring of brain activity using recordings from a handful of leads as compared to the 24 leads of standard EEGs. aEEG is useful for diagnosing seizures when standard EEG or a neurophysiologist to interpret it is unavailable. Nurses in a variety of settings are now being taught how to place aEEG leads and obtain recordings. Although the EEG is valuable, it should not be used alone to determine the type of seizure. Rather, the EEG interpretation with a thorough clinical description of the child's behavior during the seizure will inform the correct classification of the seizure and the appropriate treatment choice.

Therapeutic Management

The goal of treatment of seizures and epilepsy is to control the seizures or to reduce their frequency and severity so that the child may live as normal a life as possible. Discovering and, when possible, correcting the underlying cause of the seizures can lead to complete control of all seizures. If the seizure activity is a manifestation of an infectious, traumatic, or metabolic process, the seizure therapy is instituted as part of the general therapeutic regimen. There are four treatment options for epilepsy: drug therapy, ketogenic diet therapy, vagus nerve stimulation (VNS), and epilepsy surgery.