

Carpe Diem – Seize the Day Blog

Editor's Note: Content presented in the Carpe Diem – Seize the Day Blog is for awareness and informational purposes only, and it is not meant to be a diagnostic tool.

Were you aware that in 2017 the International League Against Epilepsy (ILAE) released updated classifications for epilepsy? The ILAE stated that the new classifications better reflect current scientific understanding of seizures. The last year that the classifications were last updated in 1989.

Prior to 2017, epileptic seizures were divided into two main categories — partial-onset seizures and generalized seizures. Partial-onset seizures originate in one area or side of the brain and generalized seizures start in both sides of the brain.

The ILAE's new classification in 2017 now considers three main factors when defining seizures:

- Point of origin
- Awareness level
- Behaviors

For example, **simple partial seizures have been renamed focal onset aware seizures, and complex partial seizures have been reclassified as focal onset impaired awareness seizures.**

Ingrid Scheffer, who oversaw the ILAE's efforts to reclassify seizures stated that the ILAE wanted to focus on creating "transparent language" for seizure types. Scheffer stated, "We wanted language that patients could understand, not just doctors."

The point of origin for each type of seizure is now classified into one of four categories:

- **Focal Onset** — Formerly known as a "simple partial seizure," focal onset seizures originate within networks limited to one hemisphere of the brain. They may be localized to one small area of the brain or more widely distributed.
- **Generalized Onset** — These originate within and rapidly engage areas in both sides of the brain at once.
- **Unknown Onset** — As the name suggests, the origin of these seizures is unknown.
- **Focal to Bilateral Seizure** — These seizures start on one side of the brain and spread to both sides.

Awareness levels during seizures have four distinguishing features:

- **Focal Aware** — During focal aware seizures, a person is aware, but may be unable to talk or respond during a seizure.
- **Focal Impaired Awareness** — Formerly known as a "complex partial seizure," a focal impaired awareness seizure occurs when a person's awareness is impacted at some point during a seizure.

- **Awareness Unknown** — This classification is used when a seizure takes place with no witness to observe awareness levels.
- **Generalized Seizures** — Generalized seizures, which affect both halves of the brain, usually always affect a person’s awareness or level of consciousness in some way.

Behaviors that accompany focal onset seizures also have classifications:

- **Focal Motor Seizure** — This term describes a seizure accompanied by movement, such as stiffening, thrashing, jerking, or automatic movements like walking or running.
- **Focal Nonmotor Seizure** — This is a seizure with other symptoms that precede it, such as changes in thinking, emotions, or sensation.

These behaviors accompany generalized onset seizures:

- **Generalized Motor Seizure** — “Tonic-clonic seizures,” with their characteristic stiffening and jerking motions, is still an accurate term. However, the term “grand mal seizure” that often accompanied that description is no longer relevant.
- **Generalized Nonmotor Seizure** — “Absence seizures,” with brief changes in awareness that include staring and some repeated movements, is the new classification. This has replaced “petit mal seizures.”

Understanding the history of epilepsy research can shed light on how and why terminology has changed, and why the current set of terms is the most accurate to date. The ancient Greeks coined the term epilepsy (meaning “to seize”) and attributed the condition to an attack by a demon or a god. Babylonians documented seizures on clay tablets. Ancient Persians believed the source was mental illness, while Chinese physicians more than 2,500 years ago believed epilepsy was caused by an excess of secretions in the brain.

By the 1860s, British neurologist John Hughlings Jackson had determined that seizures were due to activity in the brain. For the first time, he hypothesized that seizures present differently depending upon the part of the brain from which they originated. In the 1930s, this groundbreaking theory inspired Canadian-American neurosurgeon Wilder Graves Penfield to use electrostimulation to simulate the seizure behavior and locate the area of the brain where the onset occurred.

Henri Jean Pascal Gastaut took that research one step further, working with his wife, Yvette, to define five major human electroencephalogram (EEG) patterns. He also discovered Gastaut syndrome (photosensitive epilepsy) and Lennox-Gastaut syndrome (severe childhood encephalopathy). Diagnostic imaging helped Gastaut better understand seizures.

Significant advances in diagnostic imaging have been made in the last 50 years. New imaging tools include computerized tomography (CT scan), magnetic resonance imaging (MRI), single photon emission computerized tomography (SPECT) and positron-emission tomography (PET), magnetic resonance spectroscopy, and magnetoencephalography (MEG). With each new tool, scientists have become better able to understand brain activity.

As scientists gained a deeper understanding of the brain and epilepsy, formal organizations were established to study epilepsy, share knowledge, and improve care. The International Bureau for Epilepsy (IBE) was established in 1961 to study the medical and nonmedical aspects of epilepsy. In 1966, the surgeon general of the United States created the General Public Health Service Advisory Committee on the Epilepsies.

The International League Against Epilepsy took a leadership role in 1969 when it accepted the first “Clinical and electroencephalographic classification of epileptic seizures” at its General Assembly in New York. The new standards created common terminology for epilepsy. A shared set of terminology facilitated improved communication and information-sharing among researchers. Those original classifications were updated in 1981 and 1989 before the most recent update in 2017.

It may take some time to get used to the new terminology. However, that’s OK as there are no “Epilepsy Police” out there who would rush to correct you. When ILEA transformed the old terminology to the new terms for seizures, I think helps to clarify epilepsy terms for everybody.

Editor’s Note: The Carpe Diem – Seize the Day Blog will be distributed and posted weekly.
Always remember – **CARPE DIEM – SEIZE THE DAY!**

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