

“Ceribell”

CE Provider: Dept. for Behavior Health, Developmental and Intellectual Disabilities

KBN Provider-Training Number: 5-0051-0126-753




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**Status Epilepticus is a Silent Killer in Hospitals**

	Sepsis	Stroke	Cardiac Arrest	Status Epilepticus (Severe seizure)
Inpatient Deaths Annual, US	212,500 <sup>1*</sup>	~50,000 <sup>3*</sup>	22,400 <sup>3</sup>	~30,000 <sup>8-9*</sup>
In-Hospital Mortality Rate	12.5% <sup>1</sup>	6% <sup>4*</sup>	62.7% <sup>3</sup>	30% <sup>10</sup>
Average Age	67 <sup>2</sup>	65 <sup>5*</sup>	63 <sup>6</sup>	40 <sup>7</sup>
Hospital Protocol	✓	✓	✓	✗

\*Unintentional deaths

<sup>1</sup> Park, C. et al. (2018) *Clinical Epidemiology* 11:108-114  
<sup>2</sup> Park, C. et al. (2018) *Clinical Epidemiology* 11:108-114  
<sup>3</sup> Park, C. et al. (2018) *Clinical Epidemiology* 11:108-114  
<sup>4</sup> Park, C. et al. (2018) *Clinical Epidemiology* 11:108-114  
<sup>5</sup> Park, C. et al. (2018) *Clinical Epidemiology* 11:108-114  
<sup>6</sup> Park, C. et al. (2018) *Clinical Epidemiology* 11:108-114  
<sup>7</sup> Park, C. et al. (2018) *Clinical Epidemiology* 11:108-114  
<sup>8</sup> Park, C. et al. (2018) *Clinical Epidemiology* 11:108-114  
<sup>9</sup> Park, C. et al. (2018) *Clinical Epidemiology* 11:108-114  
<sup>10</sup> Park, C. et al. (2018) *Clinical Epidemiology* 11:108-114

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**Like Stroke, Status Epilepticus is a Neuro-Emergency Requiring Early Diagnosis**

	Stroke	Status Epilepticus
Mortality	6% <sup>1</sup>	30% <sup>2</sup>
Time-driven Mortality <small>(Relative increase)</small>	+17% per hour <sup>3</sup>	+13% per hour <sup>4</sup>
Guidelines for Diagnosis	25 Minutes <sup>5</sup>	15-60 Minutes <sup>6</sup>
Discharge to Long-term care	17% <sup>7</sup>	18% <sup>10</sup>
Readmission within 30-days	17% <sup>8</sup>	15% <sup>11</sup>
Prevalence per year	~800,000 <sup>9</sup>	~200,000 <sup>12</sup>

<sup>1</sup> Park, C. et al. (2018) *Clinical Epidemiology* 11:108-114  
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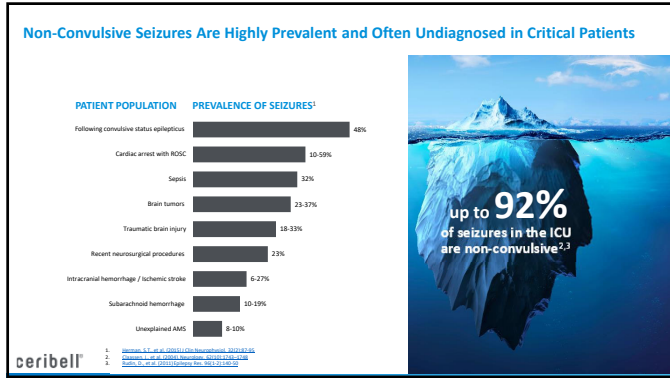
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**There is a Growing Consensus Regarding the Necessity of EEG to Detect and Manage Seizures Coexistent with Underlying Conditions**

**NEUROCRITICAL CARE SOCIETY**

"EEG should be initiated within one hour of suspected SE in all patients."

2022 NCS Guidelines for Evaluation and Management of Status Epilepticus  
[Toubi, S., et al. \(2022\) \*Critical Care Medicine\* 51\(10\): 2022-2030.](#)

**NEUROCRITICAL CARE SOCIETY**

"Recommend EEG in all patients with (Acute Brain Injury) and unexplained and persistent altered consciousness [...] and in patients with CIE that do not return to functional baseline within 60 minutes after seizure medication."

2021 NCS Consensus Statement: Statement of the International Multidisciplinary Consensus Conference  
[Kohler, R., et al. \(2021\) \*Critical Care Medicine\* 49\(10\): 2021-2030.](#)

**AMERICAN CLINICAL NEUROPHYSIOLOGY SOCIETY**

"CCEEG has an important role in detection of secondary injuries such as seizures and ischemia in critically ill adults and children with altered mental status."

2023 ACON Consensus Statement on Continuous EEG in Critically Ill Adults and Children  
[Ward, S., et al. \(2023\) \*Critical Care Medicine\* 52\(10\): 2023-2030.](#)

**American Heart Association**

"Recommend promptly performing and interpreting EEG for the diagnosis of seizures in patients who do not follow commands after ROSC."

2023 AHA/ACC/AHA/ASA/ATL/ESC Guidelines Update  
[Tsai, K.L., et al. \(2023\) \*Circulation\* 148\(10\): 2023-2030.](#)

**American Heart Association American Stroke Association**

"EEG (is recommended) for a change in mental status or depressed mental status out of proportion to the stroke."

2023 AHA/ASA Comprehensive Stroke Center Scientific Statement for Care of the Patient with Acute Ischemic Stroke  
[Lindsay, W., et al. \(2023\) \*Stroke\* 54\(10\): 2023-2030.](#)

**The Joint Commission**

"Growing evidence suggests that (comprehensive post-cardiac arrest care) is critical for both patient survival and optimal neurological outcome."

2023 Joint Commission IS Report on Reevaluation of Postcardiac Arrest  
[The Joint Commission \(2023\) \*IS Report on Reevaluation of Postcardiac Arrest\*.](#)

**American Heart Association American Stroke Association**

"New-onset seizures in the context of spontaneous ICA are relatively common [...] and most of these seizures occur within the first 24 hours of the hemorrhage."

2022 AHA/ASA Guidelines for the Management of Posterior Circulation Stroke with Intracerebral Hemorrhage  
[Anderson, M., et al. \(2022\) \*Stroke\* 53\(10\): 2022-2030.](#)

**American Heart Association American Stroke Association**

"Monitoring with continuous EEG can detect nonconvulsive seizures, especially in patients with depressed consciousness or fluctuating neurological examination."

2021 AHA/ASA Guidelines for the Management of Posterior Circulation Stroke with Intracerebral Hemorrhage  
[Anderson, M., et al. \(2021\) \*Stroke\* 52\(10\): 2021-2030.](#)

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**Brain Function with POC EEG Monitor**

- Oxygenation
- Cardiac Rhythm
- Temperature
- Hemodynamics

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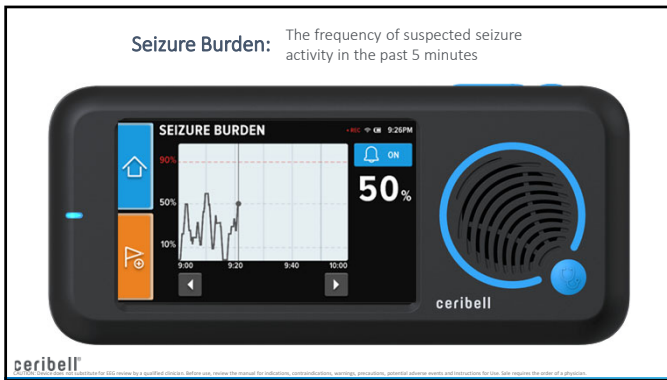
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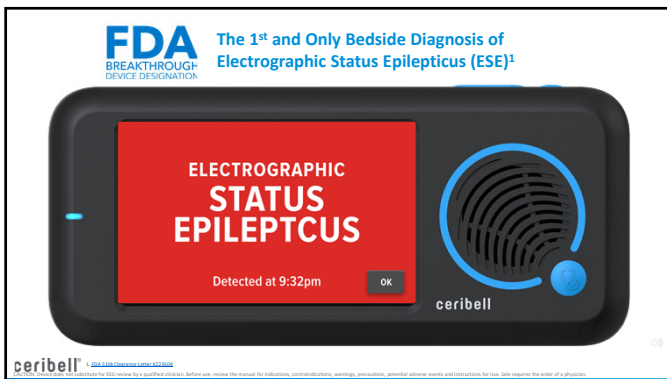
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**CASE STUDY Medication Management with POC EEG**

Patient w/ history of seizures and on home dose of Keppra IV every 12 hours

- Patient admitted to the step-down unit
- During the early morning hours, the patient started twitching on one side, including the arm and face
- Patient was moved to ICU with an infectious process

- Ceribell was applied at 6:47am and initially showed slow/normal activity
- At 7:20am, abnormal activity was detected with an alarm for >90% seizure burden
- IV Keppra was administered, and patient responded positively and returned to slow/normal
- Subsequent doses of Keppra were increased and the patient remained slow/normal

21-hr POC EEG recording

Patient transferred back to the step-down unit with one day ICU LOS

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**CASE STUDY Non-Convulsive Seizures Detected in Suspected OD Patient**

26 y/o male patient with no history of drug use or exposure

- Patient brought in by paramedics for altered mental status
- Suspected overdose
- Pinpoint pupils, nonresponsive, shallow breathing
- Narcan given in the field

In ER, given more Narcan, and intubated

Head CT, blood work, drug screen all negative (including Fentanyl)

Prior to transfer to ICU, Ceribell applied and alerted for suspected status epilepticus

Keppra and Feisphenytoin started

- Diagnosis: Post-ictal status epilepticus following likely first-time seizure
- Successfully treated
- Patient walked out of the hospital on day 2

POC EEG recording

**IMPACT**

- Rapid NCS detection allowed for faster treatment and potential impact on the need for mechanical ventilation
- Faster data acquisition allowed for quicker recognition and treatment with likely impact on patient care

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**Ceribell Positively Impacts Hospital Finances**

**Reimbursement**

- Use Existing CPT Codes
- Capture Appropriate CC/MCC
- Ceribell - Exclusive CMS Reimbursement of up to **\$913.90** per eligible patient!

**Cost Savings**

- Reduce Patient Transfers
- Reduce Length of Stay and Empiric Medications & Intubations
- Cost-Effective EEG Expansion

Ceribell partners with you to validate the robust financial impact

Revenue	Expenses	Net Impact
\$738,400	\$84,240	\$122,900
<b>Economic Impact</b>		
<b>\$665,760</b>		

**Avoided EEG-related Expenses** \$143,040

- 1. Avoided Costs for 1st EEG Coverage: \$100,000
- 2. Avoided Costs for Repeating 1st EEG Coverage: \$43,040

**Operational Impact** \$557,740

- 3. Reduced Patient Transfers: \$400,000
- 4. Reduced Intubation and Medication: \$84,240
- 5. Reduced Length of Stay: \$73,500

**Reimbursement** \$84,240

- 6. Benefits for Existing CPT Codes: \$84,240
- 7. Additional CPT Reimbursements: \$0

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**clarityPro™** The FIRST Critical Care monitoring device and Neurodiagnostic device to achieve both



**FDA** | **CMS**

BREAKTHROUGH DEVICE DESIGNATION 510(K) CLEARANCE

Exclusive Code - New Technology Add On Payment (NTAP) Up to **\$913.90** per eligible patient!

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