Epilepsy investigated non-invasively using Electroencephalography (EEG) and Magnetoencephalography (MEG)

**INTRODUCTION:** Epilepsy is a brain disorder in which a person has repeated seizures (abnormal synchronous neuronal activity in the brain, often sudden and involuntary contraction of a group of muscles and loss of consciousness) over time.

- Brain tumors
- Sleep deprivation
- Causes for epilepsy
- Sleep deprivation
- Fever
- Sleep deprivation
- Flickering lights

**METHODS:**

- Magnetoencephalography (MEG)
- Electroencephalography (EEG)
- Intracranial EEG (IEEG)

**OVERALL GOAL:** Localizing epilepsy for surgery planning [1]

**Brain Lobe:**
- Frontal lobe: 1-2%
- Parietal lobe: ~6%
- Occipital lobe: 5-10%
- Temporal lobe: 30-50%
- Unclassified: ~32%

**Brain Tumors by Lobe:**
- Frontal lobe: 1-2%
- Parietal lobe: ~6%
- Occipital lobe: 5-10%
- Temporal lobe: 30-50%
- Unclassified: ~32%

**Incidence and Prevalence:**

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Incidence (per 100,000 people)</th>
<th>Prevalence (per 1000 people)</th>
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**Causes for Epilepsy:**
- Brain tumors
- Sleep deprivation
- Causes for epilepsy
- Sleep deprivation
- Flickering lights