

# ALTERNATIVE AND EXPERIMENTAL THERAPIES FOR EPILEPSY

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# General Outline

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## Alternative Therapies

Treatments that are different from the medicines or surgery usually prescribed by doctors

## Experimental Therapies

Treatments that are being studied to see if they are effective and safe

# Alternative Therapies Outline

- Diet Therapy
- Hormone Therapy
- Art Therapy
- Oxygen Therapy
- Herbal Medicines
- Supplements
- Neurofeedback

Alternative  
Therapies

# Outline

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- **Diet Therapy**
- Hormone Therapy
- Art Therapy
- Oxygen Therapy
- Herbal Medicines
- Supplements
- Neurofeedback

# Outline

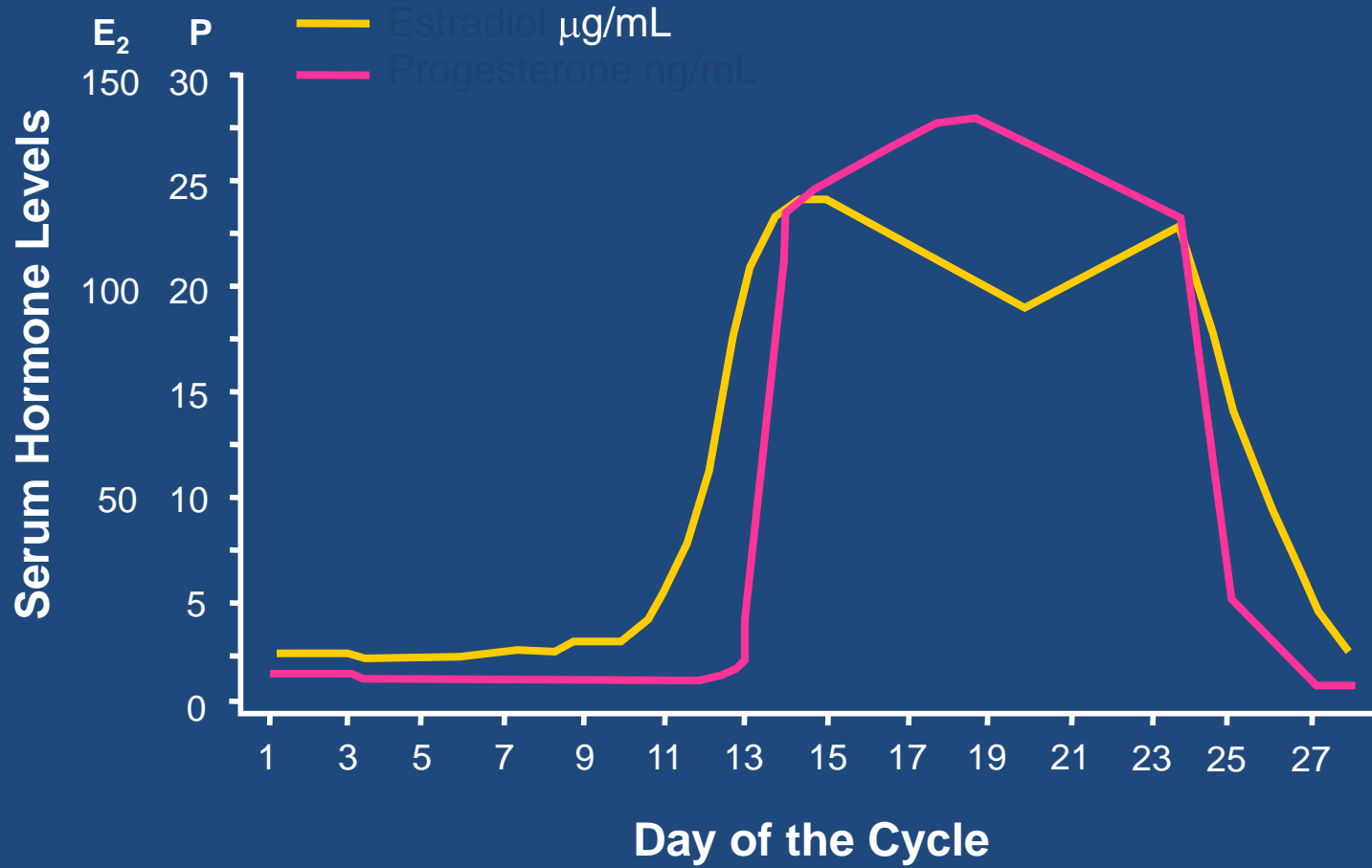
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- Diet Therapy
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# Hormone Therapies

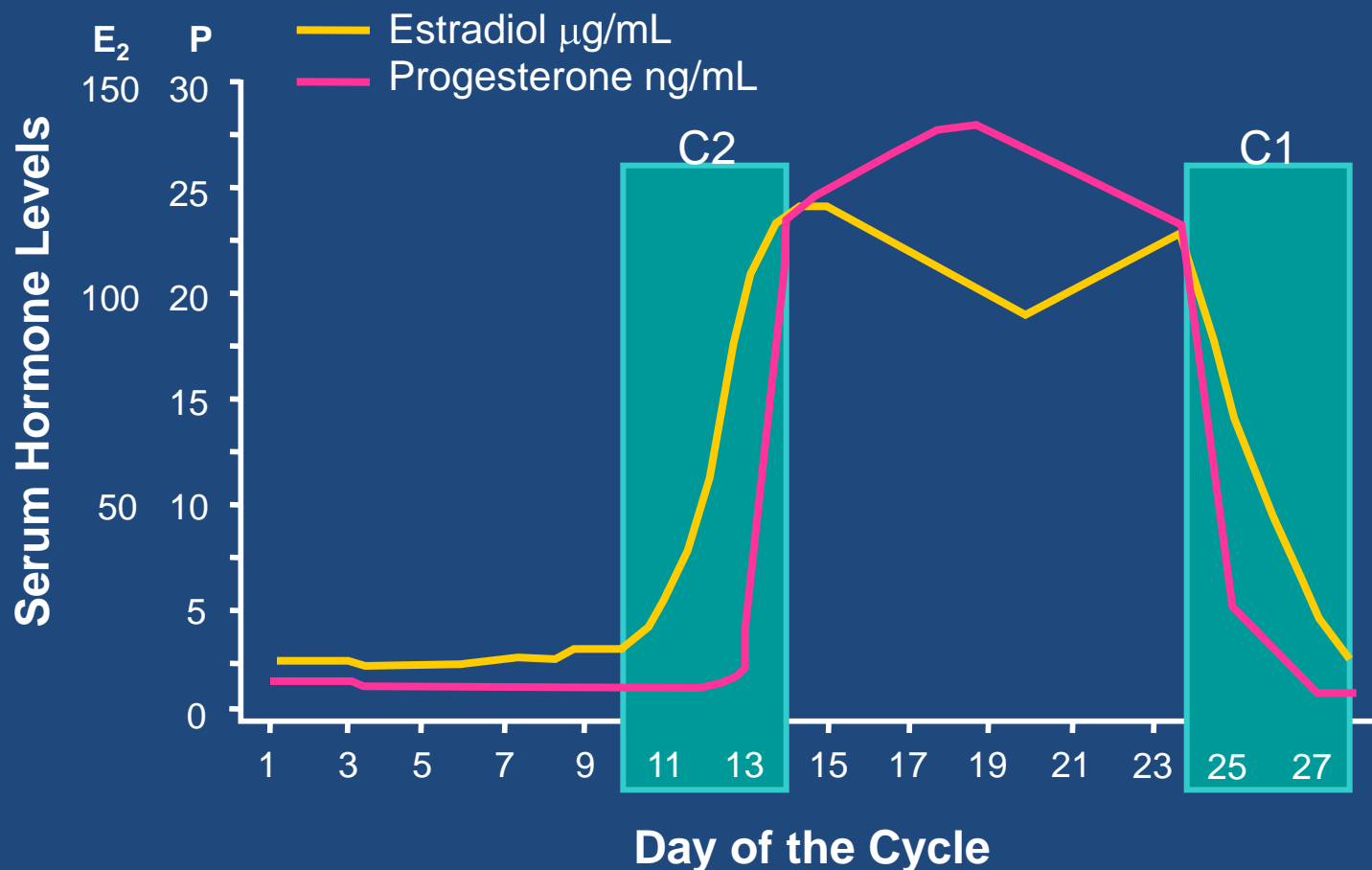
- Some women experience increase in seizure frequency around their menstrual period
  - ▣ Catamenial seizures
- This is believed to be due to sudden changes in levels of hormones
- There are three types of catamenial seizures

# Menstrual Cycle



E<sub>2</sub> = estradiol; P = progesterone.

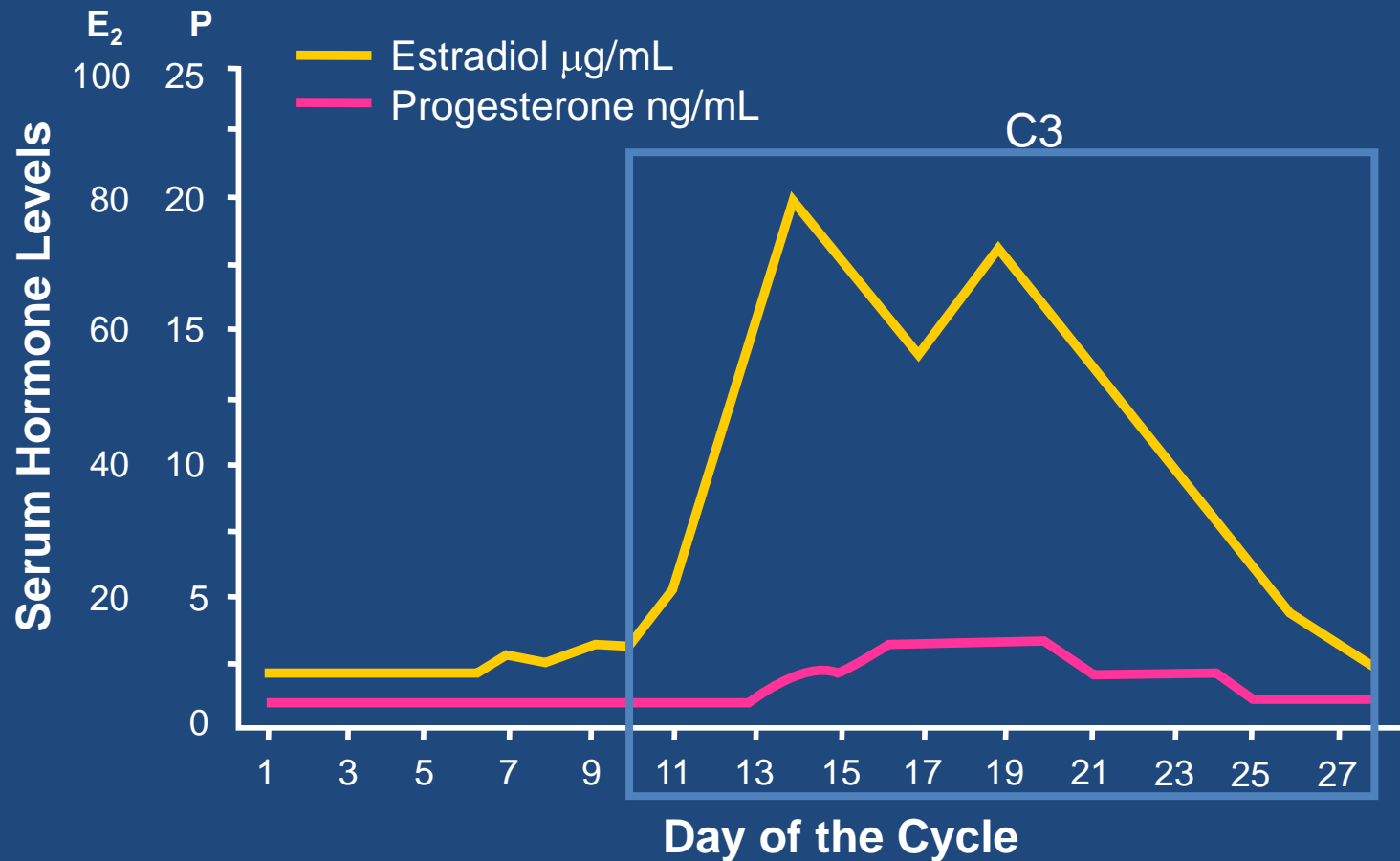
## Normal Cycle: Seizures More Frequent With Drop in Progesterone (C1) or With Estrogen Surge (C2)



C1 = catamenial 1 (seizure pattern); C2 = catamenial 2; E<sub>2</sub> = estradiol; P = progesterone.

Herzog AG, et al. *Epilepsia*. 1997;38:1082-1088.

# Inadequate Luteal Phase Cycle



C3 = catamenial 3.

Herzog AG, et al. *Epilepsia*. 1997;38:1082-1088.

# Catamenial Epilepsy

- ***Katamenios*** = “monthly”
- The tendency for increased seizures related to the menstrual cycle
- Affects 30%-40% of women with epilepsy

**Note: Catamenial seizure patterns will be apparent only during ovulatory cycles, and 30% of cycles in women with epilepsy are anovulatory**

# Hormone Therapy

- Supplementation of Progesterone during the period of increased seizures is effective in reducing seizures
- Oral natural progesterone is the most effective
  - ▣ Give for 7 days starting on day 23 of the cycle
- Treatment with intramuscular progesterone is sometimes effective (Depo-Provera)
- Some seizure medications shorten the half-life of Depo-Provera and more frequent injections are necessary (every 10 or 8 weeks instead of every 12 weeks)

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# Art Therapy

- Art therapy is based upon the belief that the creative process involved in artistic self-expression helps people to resolve conflicts and problems, develop interpersonal skills, manage behavior, reduce stress, increase self-esteem and self-awareness, and achieve insight
- It is not intended to reduce seizures; however, by reducing stress, art therapy can indirectly lower seizure frequency

# Art Therapy

- The art therapist creates a safe environment that helps the person with epilepsy communicate visually through drawing, painting, and sculpting
- Particularly beneficial in:
  - ▣ People who have trouble expressing their feelings
  - ▣ People who have difficulty relating to other people
  - ▣ Young adults making a transition from dependency on their parents to a more independent lifestyle
- Art therapy generally takes place over a number of sessions
- It is not necessary for the patient to have artistic skills
- [www.arttherapy.org](http://www.arttherapy.org)

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# Oxygen Therapy

- Hyperbaric Oxygen Therapy is an approved treatment for certain disorders including:
  - ▣ Skin ulcers
  - ▣ Drowning
- The patient enters a small sealed chamber
- Oxygen pressure is gradually increased up to a certain level, then gradually decreased
- Treatment is done over several sessions

# Oxygen Therapy

- Recent studies suggest that it might be helpful in various neurological disorders
- It has been studied in Autism, Parkinson's disease and Alzheimer's disease
- Only one small study was done on Epilepsy patients and revealed benefit with decreased seizures
- **WARNING:** It is not approved for the treatment of seizures and safety has not been established. In fact, it might cause seizures in patients who never had seizures

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# Herbal Medicines

- ❑ No proven benefits in epilepsy
- ❑ Some herbal medicines may increase the risk of seizures
- ❑ Some herbal medicines may interact with seizure medications
- ❑ If you plan on trying an herbal medicine, first research it thoroughly and consult with your doctor
- ❑ NEVER substitute an herbal medicine for your regular seizure medications
- ❑ <http://www.mskcc.org/mskcc/html/11570.cfm>

# Herbal Medicines

## Some Herbal Substances

- ❑ Borage
- ❑ Caffeine
- ❑ Chamomile
- ❑ Ephedra
- ❑ Evening Primrose
- ❑ Ginkgo
- ❑ Ginseng
- ❑ Herbal Essential Oils
- ❑ Kava
- ❑ Passionflower
- ❑ St. John's Wort
- ❑ Valerian

## Used In

- ❑ Anxiety
- ❑ Depression
- ❑ Low Energy
- ❑ Arthritis
- ❑ Memory difficulties

## Caution

- ❑ Some may cause seizures
- ❑ Some may have bad interactions with seizure medications or other medications

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# Supplements

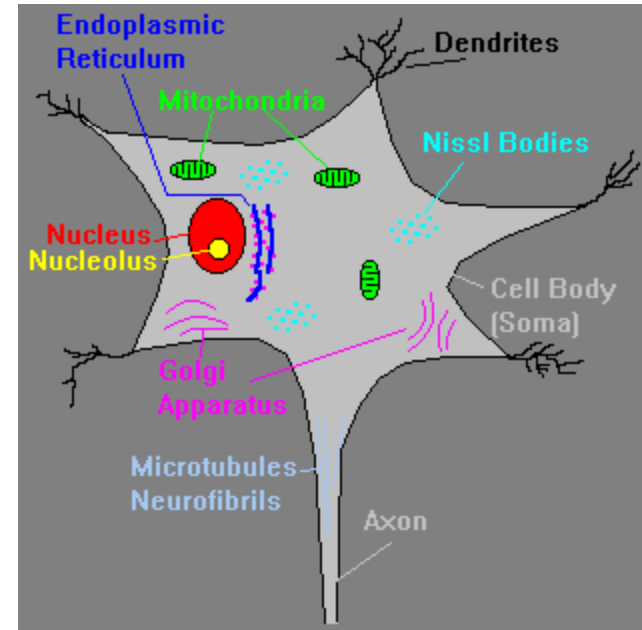
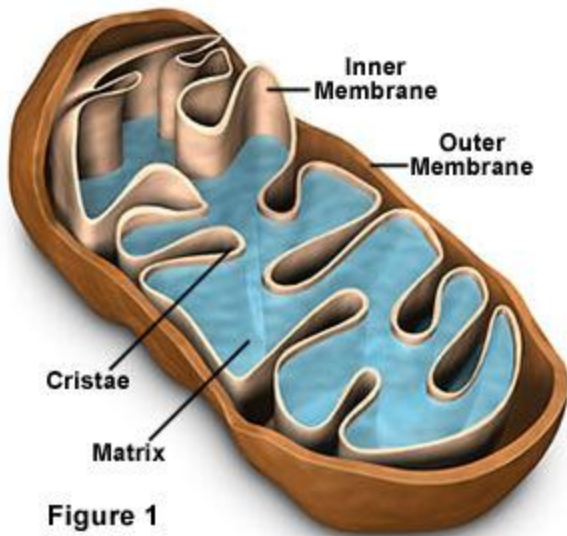
- Vitamins: *A - E*
- Minerals: *Magnesium, Selenium, Zinc...*
- Other: *CoQ10, Carnitine, anti-oxidants, ...*

# Supplements: The Rule

- Most supplements are probably safe if taken at the recommended dose
- No proven efficacy in treating seizures
- **BUT**: Some supplements are recommended in certain metabolic disorders affecting the function of the mitochondria

# Mitochondria

Mitochondria Inner Structure



Mitochondria are small organelles inside the cells, including the brain cells. Their function is to generate energy for the cell

# Mitochondria and Seizures

- Certain mitochondrial diseases can cause seizures
- It is possible that some patients with epilepsy might have an un-diagnosed mitochondrial disease as a cause of their seizures
- It is not know if repeated seizures exhaust the energy source of the brain and lead to mitochondrial dysfunction

# Supplements

- ❑ In some cases, a combination of supplements and vitamins that support the energy production in the brain might be helpful
- ❑ These are not recommended in everybody, but are safe
- ❑ Some supplements include: Co-Q10, Carnitine, Vitamin B1, B5, B6, C, and E, Lipoic Acid
- ❑ Folic acid is recommended in all women of child-bearing age
- ❑ Vitamin D and Calcium are recommended for all patients taking seizure medications

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# Neurofeedback

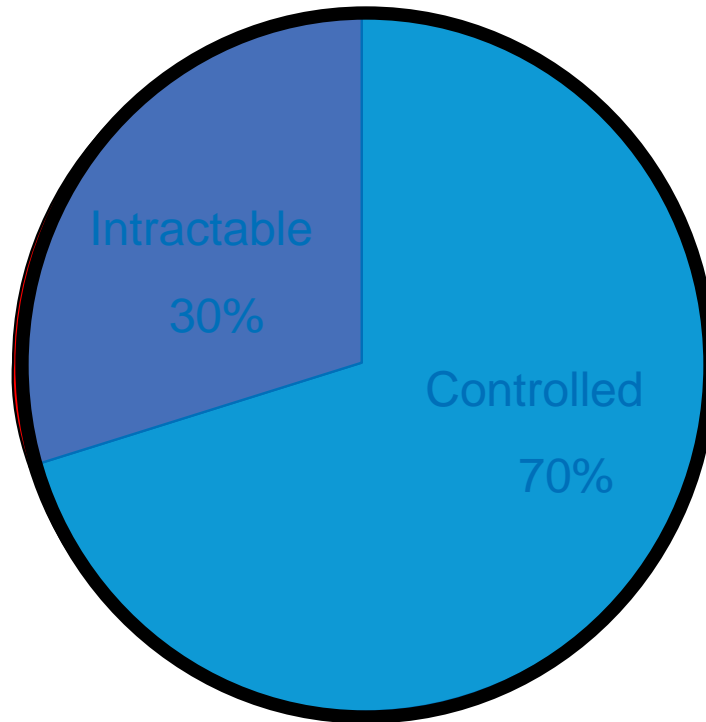
- A therapy technique that presents the patient with realtime feedback on brainwave (EEG) activity
- The patient is then trained to change certain aspects of the brain waves
- It is frequently used in ADHD
- Some report claim benefit in seizures
- Effectiveness in treating seizures has not be studied or proven

# Experimental Therapies

- Treatment modalities that are being studied by doctors and scientists to determine if they are effective and safe
- Experimental medications
- Experimental devices

Experimental  
Therapies

# Effect of Seizures Medications



# Intractable Epilepsy

30%

- ❑ Some patients are intractable from the onset of their seizures
  - ➔ The nature of epilepsy is different
  
- ❑ Some patients become intractable after many years of being well-controlled
  - ➔ Seizures become immune to medications

# Treatment Options for Intractable Epilepsy

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- Vagus Nerve Stimulator
- Epilepsy Surgery
- Experimental Drugs
- Experimental Devices

# Experimental Drugs

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Standard  
Drugs

Available in Clinical Trials

Novel  
Drugs

Not currently available  
for human use

# Standard Experimental Drugs

1. **Clinical Trials** designed to study if the drugs are safe and effective in controlling seizures
2. Participation in the study carries usually a chance of receiving a Placebo (sugar pill)
3. After the initial study period, all patients receive the actual drug
4. In general, about 50% benefit and experience a decrease in their seizures

# Non-Standard Drugs

- **Pharmacogenetics**: a new research area that studies differences in certain chemicals in the brains of patients with intractable seizures
  
- Two goals:
  1. Understand why certain patients continue to have seizures despite treatment with multiple medications
  2. Develop more *intelligent* drugs that may work in patients that fail treatment with standard drugs

# Experimental Devices

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Deep Brain  
Stimulation

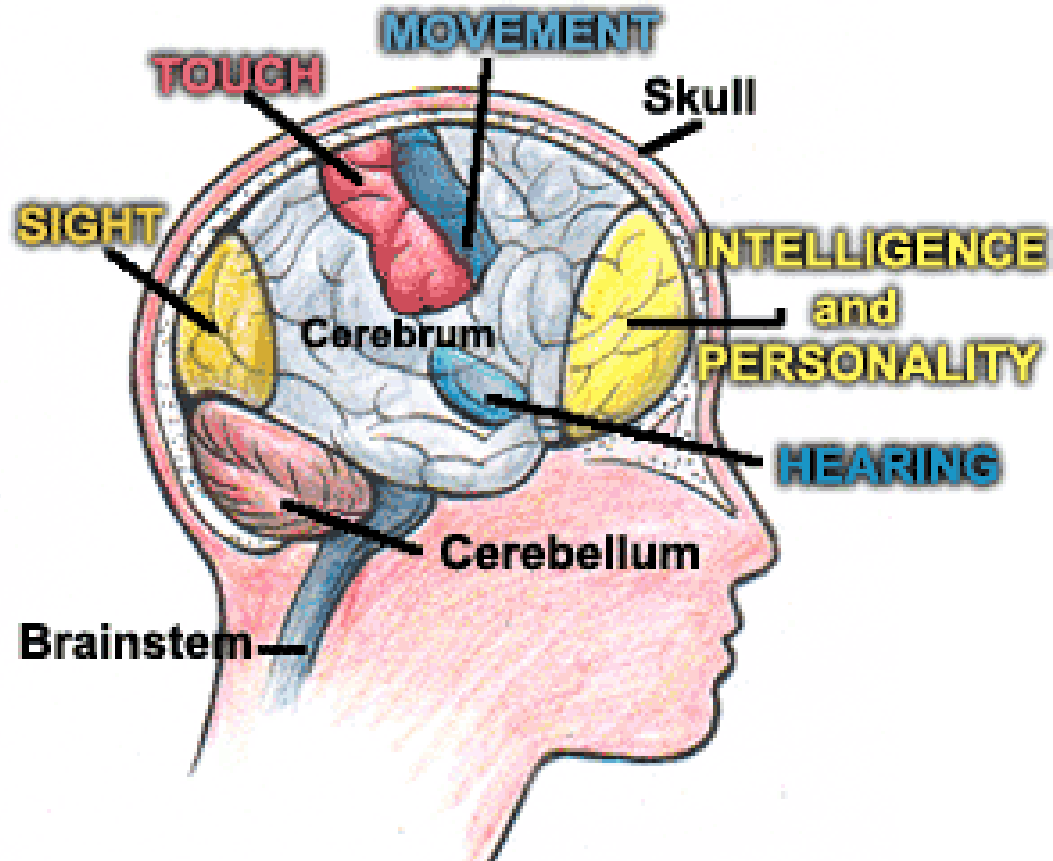
Cortical  
Stimulation

# Conditions for Epilepsy Surgery

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1. Single epileptic focus
2. Focus is in a region of the brain without important function, **ex: language, memory, motor ...**

# Functional Areas



# Indication for Experimental Devices

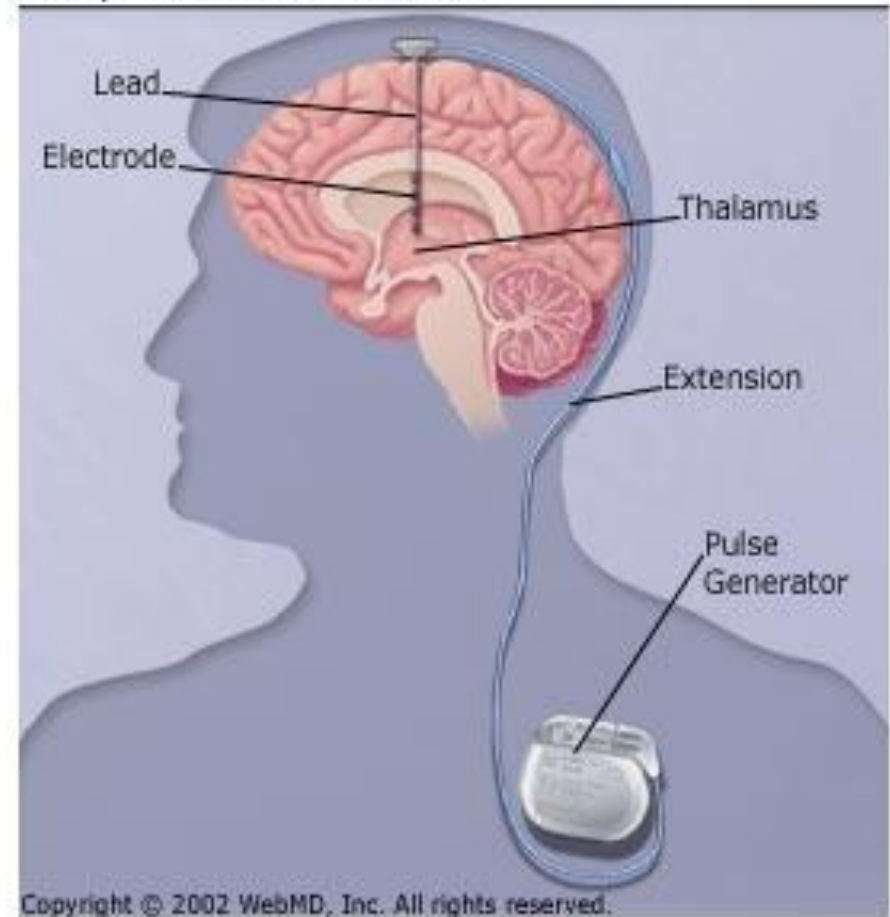


1. More than one epileptic focus
2. Epileptic focus in an important part of the brain

# Deep Brain Stimulation

- ❑ Electrode implanted in a deep part of the brain
- ❑ Fires electrical impulses continuously

Deep Brain Stimulation

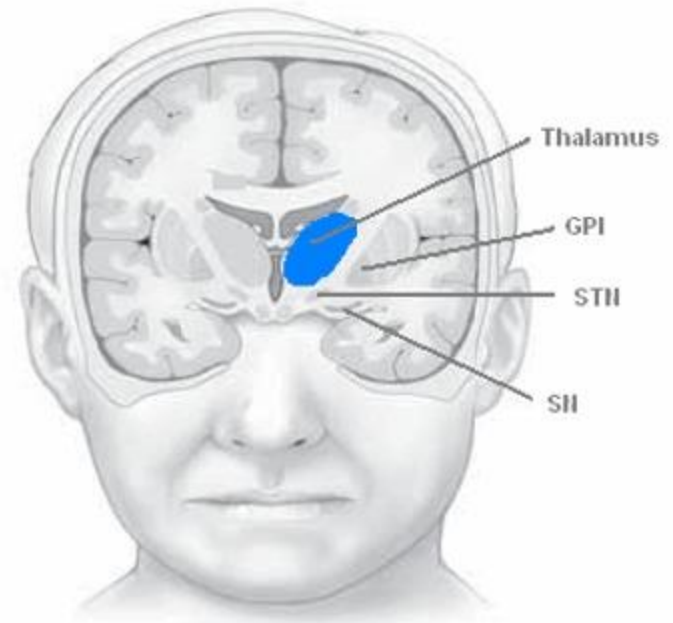


# The Device

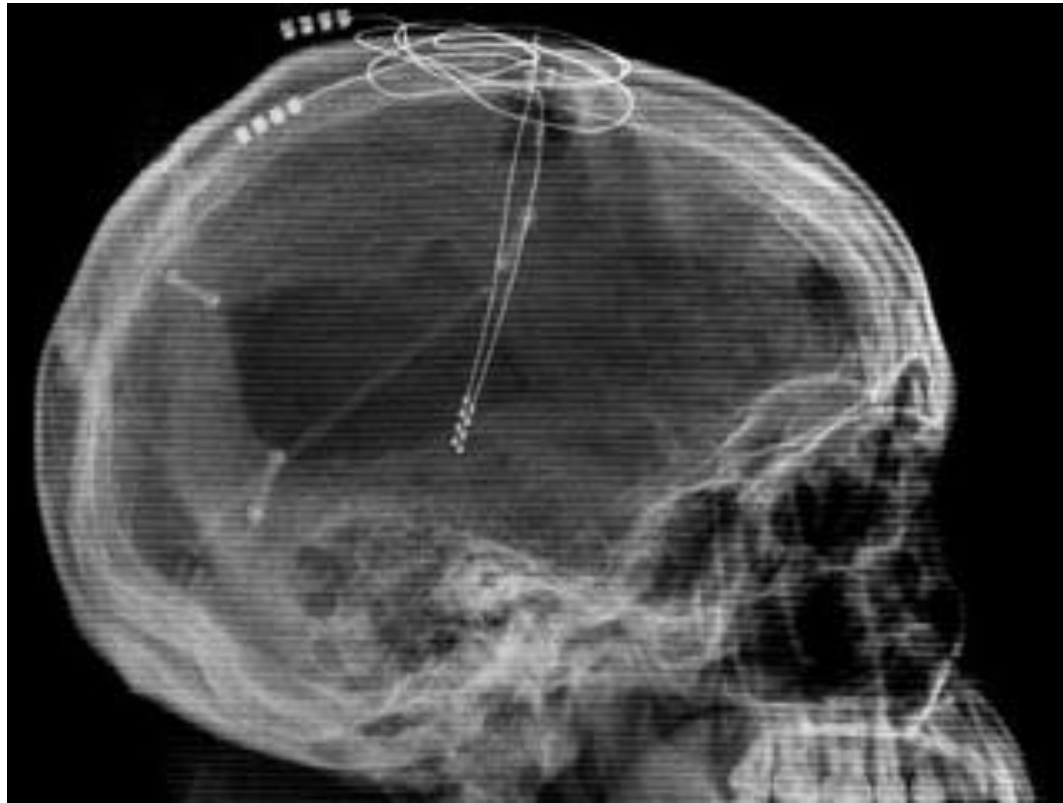


# Deep Brain Stimulation

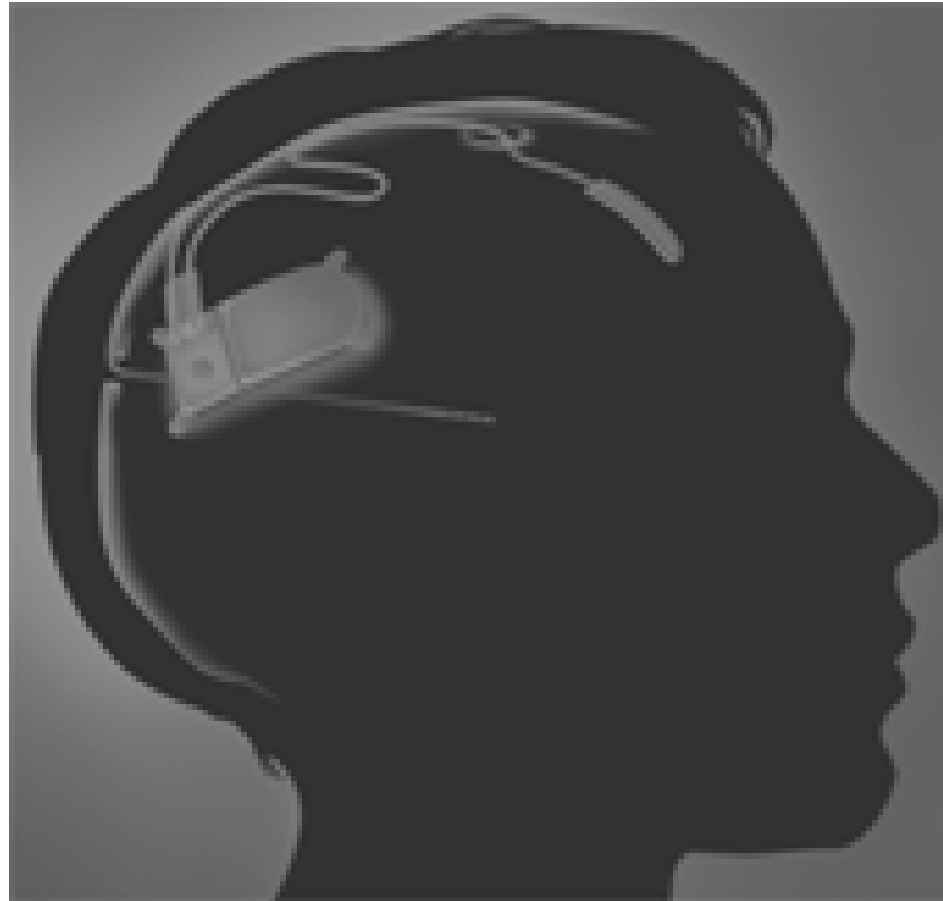
- Parkinson's Disease
- Essential Tremor
- Psychiatric disorders
- Epilepsy



# Deep Brain Stimulation



# Responsive Neuro-Stimulation

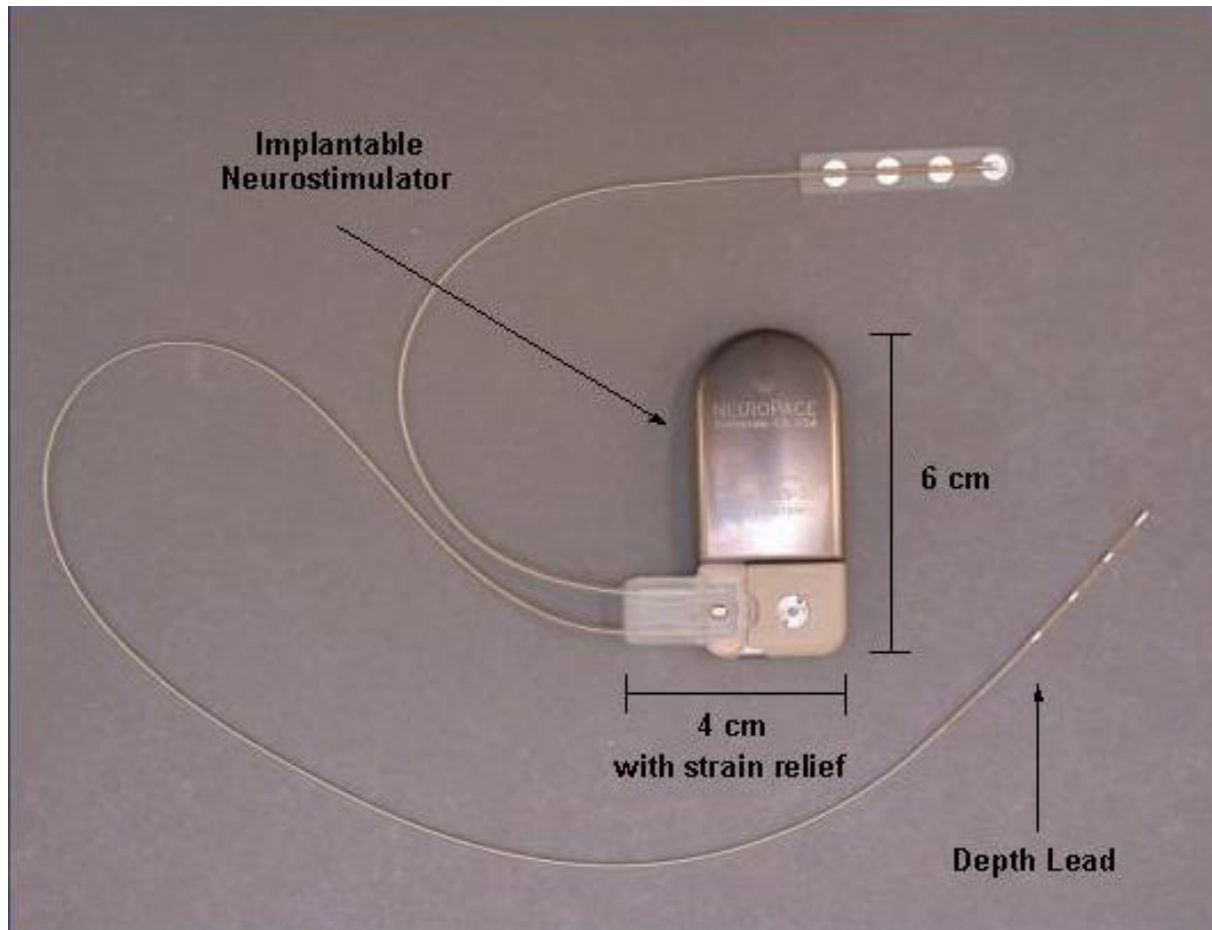


# The Idea

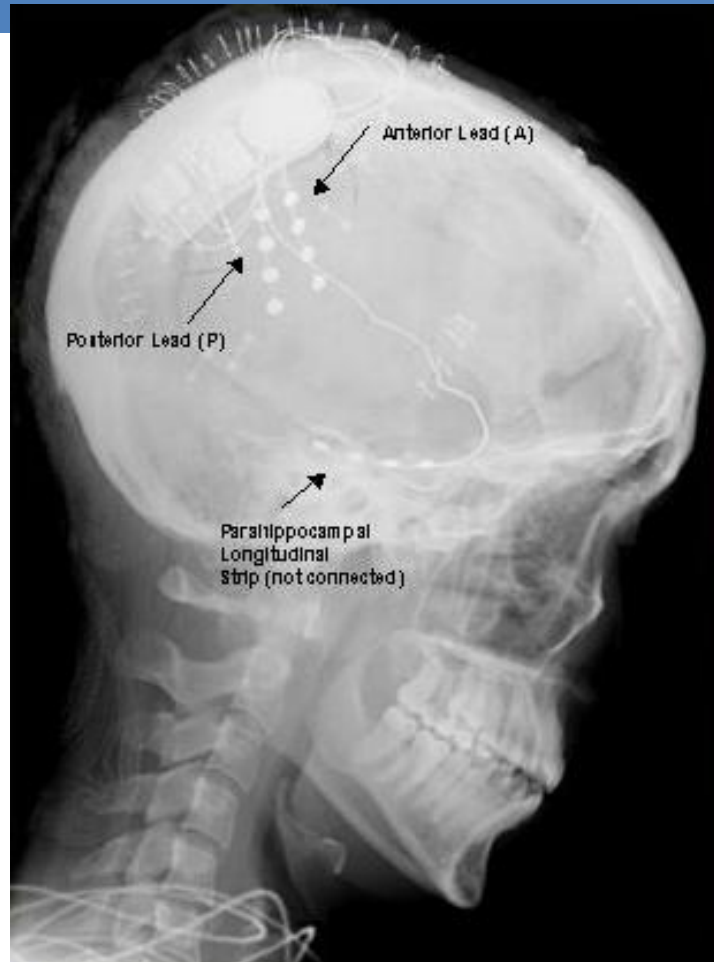
- Permanent implantable device
- EEG that monitors and detects seizures
- Electrical stimulator that fires an electrical stimulus to stop the seizure



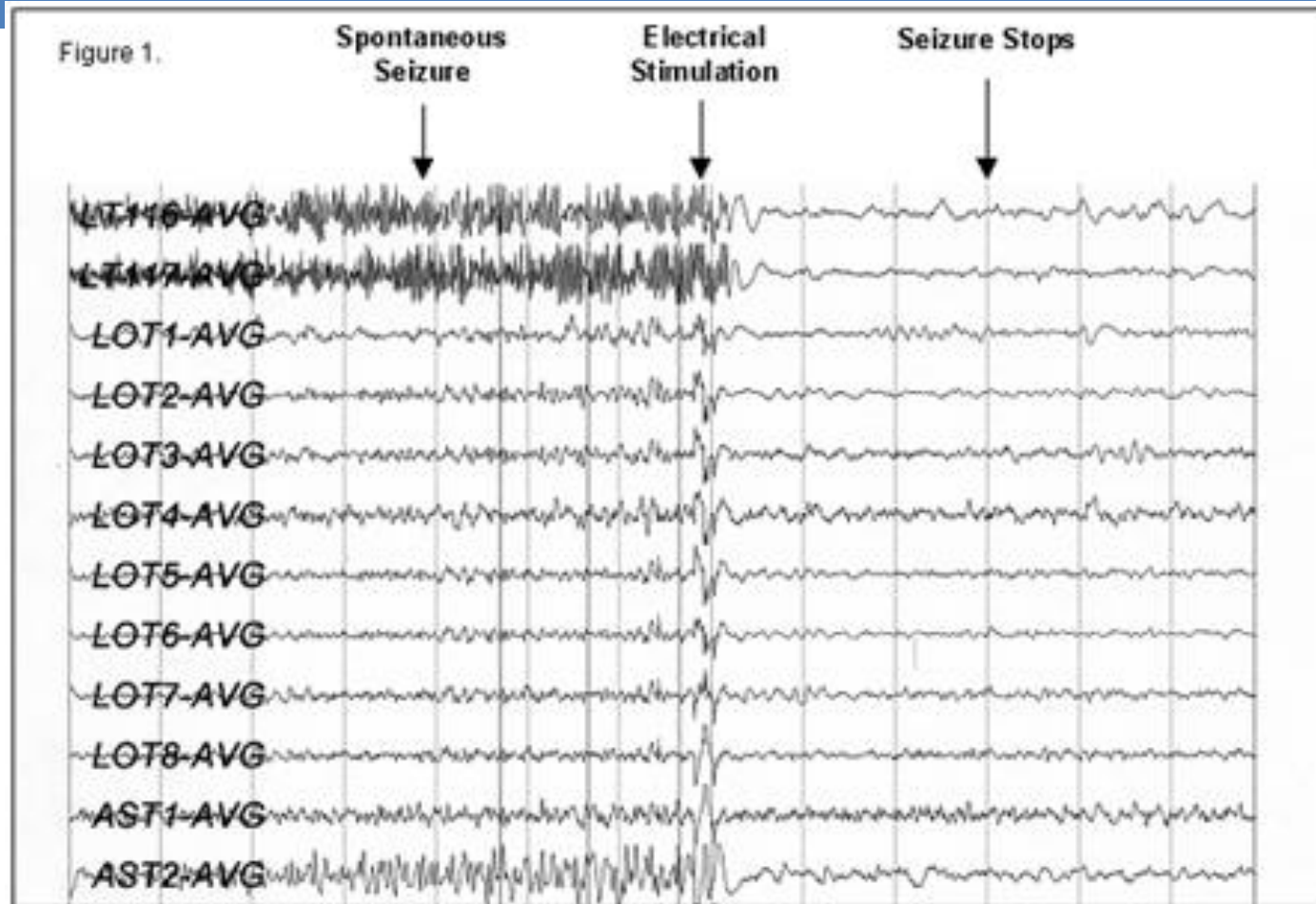
# The Device



# Post Implantation X-Ray



# Seizure Termination



# Conclusions

- Both alternative and experimental treatments might be good options for some patients with epilepsy, especially when seizures are difficult to control
- It is very important to remember that the reason some treatments are called **Alternative** or **Experimental** is because they have never been proven to work as well as conventional treatments
- If you are interested in trying alternative or experimental treatments, make sure to research them well and discuss your options with your doctor