

San Francisco VA  
Epilepsy Center of Excellence:  
*State-of-the-Art Diagnostic &  
Therapeutic Services*

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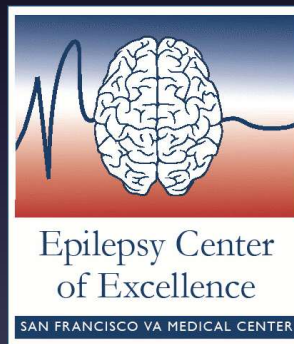
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# Epilepsy and Depression

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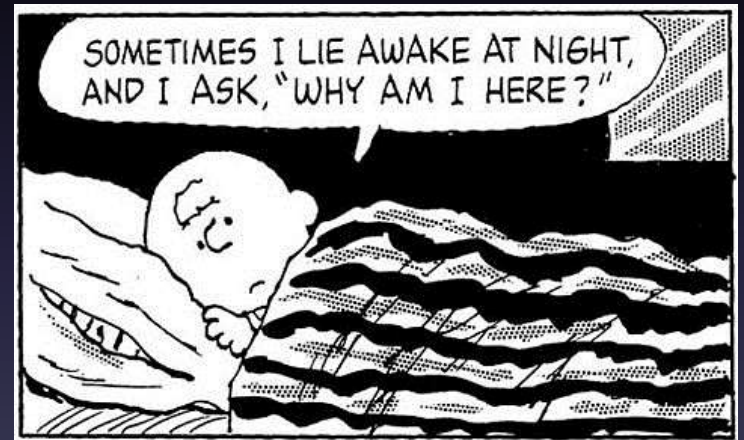
# What is Depression?

- Clinical depression: a mood disorder in which feelings of sadness, loss, anger, or frustration *interfere with everyday life* for weeks or longer
- “Major depression:” depressed mood every day for at least two weeks
  - 15% of the population experiences depression at some point in life
  - 6-8% of primary care patients meet criteria for the diagnosis
- *25-55% of epilepsy patients have depression*
- *Depression is a real disease!*



# What are the symptoms?

- Sadness/depressed mood
- Insomnia (with early morning awakenings, 2-4 AM)
- Loss of interest (“anhedonia”)
- Feelings of guilt or worthlessness
- Decreased energy
- Concentration difficulties
- Disturbance of appetite or weight
- Agitation, restlessness, or slowness of thoughts/movement
- Suicidal thoughts, plans, or attempts



# What causes depression?

- No single cause, but contributing factors include:
  - Abnormal brain chemistry
    - Due to genetics
    - Due to a reaction to stress
  - Alcohol or drugs
  - Medical problems
  - Medications
  - Sleeping problems
  - Stressful life events
    - Relationship/work problems
    - Death or illness of loved ones
    - Social isolation



# What's the risk if you have epilepsy?

- 25-55% of epilepsy patients have depression
- The suicide rate is higher for people with epilepsy
- Those with depression have a worse quality of life
- We do a poor job of treating depression in people with epilepsy....

Why?

- The focus is on seizures
- Fear of medication interactions (antidepressants and anticonvulsants)
- Poor understanding of how the diseases are linked

# Why are epilepsy patients more likely to become depressed?

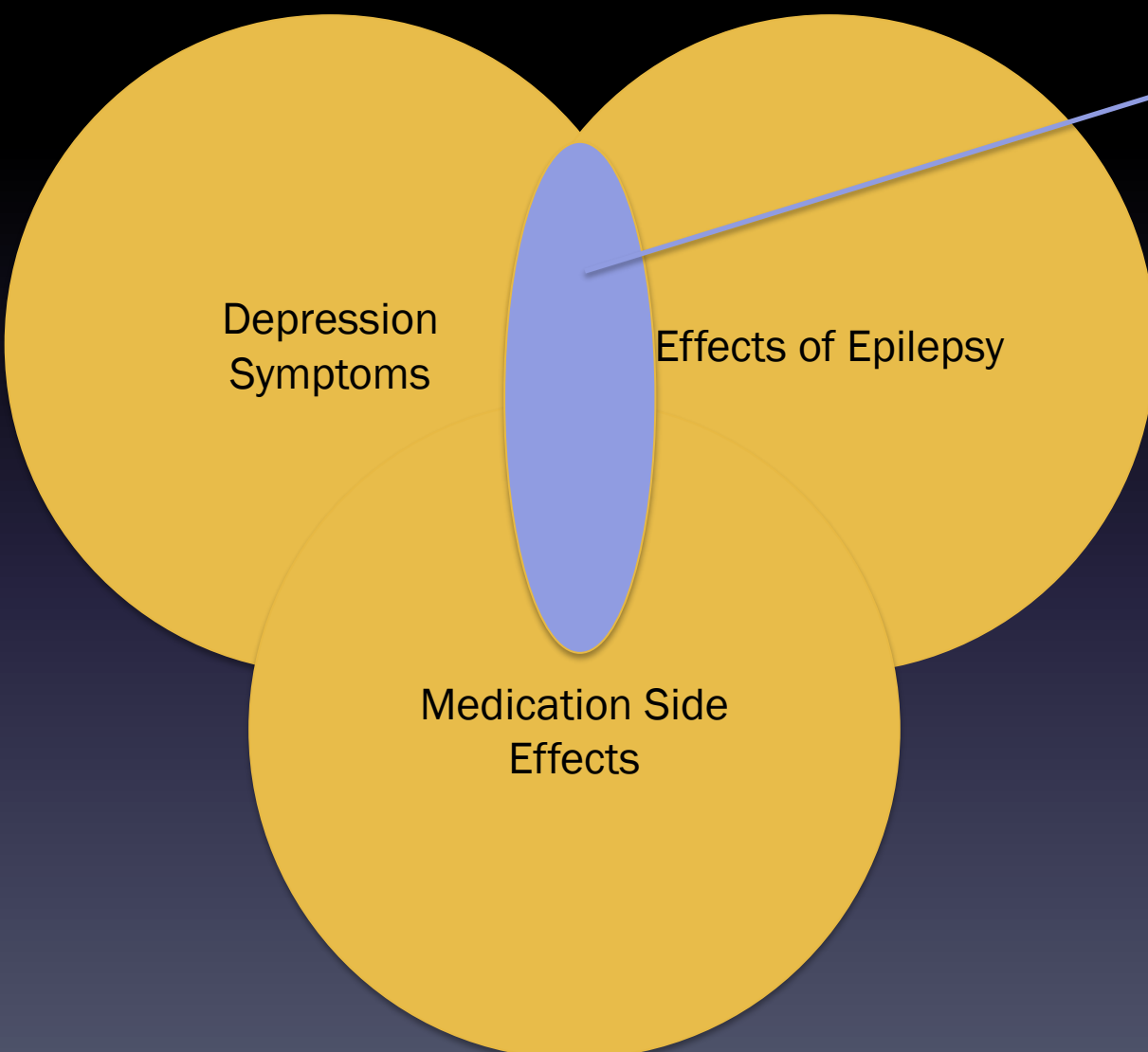
- Psychological stress caused by life with epilepsy
- Medication side effects
- The cause of the epilepsy (TBI, stroke, etc) may cause depression
- The epilepsy itself...

Depression  
Symptoms

Effects of Epilepsy

Medication Side  
Effects





Depression  
Symptoms

Effects of Epilepsy

Medication Side  
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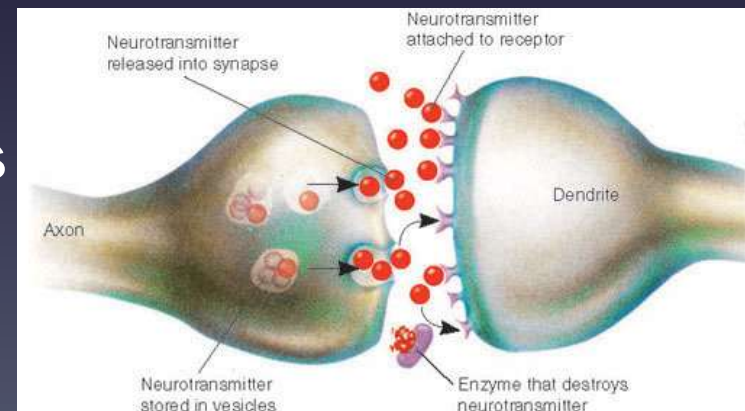
- Overlap:**
- Sad mood
  - Feeling worthless
  - Sleep disturbance
  - Decreased energy
  - Trouble concentrating
  - Disturbance of appetite/ weight
  - Agitation/restlessness
  - Slowed thinking

# Anticonvulsants and depression

- Better
  - Carbamazepine (Tegretol)
  - Lamotrigine (Lamictal)
  - Valproate (Depakote)
- Worse
  - Topiramate (Topamax)
  - Levetiracetam (Keppra)
  - Phenobarbital
  - Vigabatrin (Sabril)

# Epilepsy and Depression: The Link

- Nerve cells in the brain are constantly firing tiny electrical impulses
- These electrical impulses trigger nerve cells to release chemicals called neurotransmitters
- Neurotransmitters bind to neighboring nerve cells, triggering more tiny electrical impulses, and the process repeats....



# The Link, continued...

- Seizures are essentially “electrical storms” in part of the brain, caused by excessive synchronized electrical activity (too many neurons firing at the same time, instead of doing their job)
- These “electrical storms” may cause changes in the amounts or location of neurotransmitters
- Low levels of neurotransmitters (especially serotonin and norepinephrine), are at least partially responsible for depression

# Evidence from the lab

- Rats with epilepsy seem “depressed”
  - Less exploration
  - Drinking less sugar water
  - Their neurons have fewer “branches” and less serotonin, norepinephrine
- Rats who experience stress as newborns:
  - Develop seizures more quickly when exposed to seizure-causing drugs
  - Appear depressed, as above



# Evidence from the lab

- In humans with epilepsy, PET scans show fewer receptors for serotonin
- People with depression *before* they developed epilepsy are twice as likely to develop treatment-resistant (severe) epilepsy
- The neurotransmitters associated with epilepsy (glutamate and GABA) may be linked to the neurotransmitters associated with depression (serotonin and norepinephrine), but we don't yet understand these links

# Bottom line...

- We don't fully understand the link between depression and epilepsy
- Epilepsy may cause depression in people who are predisposed (genetics) or under significant stress
- It is possible that epilepsy makes depression worse, or vice-versa – but we need more research to understand this



# Can depression be treated?

- YES!
- Medications
- Therapy
- ECT
- There is ALWAYS hope....



# Medications for Depression

- Selective serotonin reuptake inhibitors (SSRIs):
  - Fluoxetine (Prozac) – “activating”
  - \*Mirtazapine (Remeron) – “sedating”
  - Sertraline (Zoloft)
  - Paroxetine (Paxil)
  - Fluvoxamine (Luvox)
  - **Citalopram (Celexa)**
  - **Escitalopram (Lexapro)**
- Selective norepinephrine reuptake inhibitors (SNRIs):
  - Desvenlafaxine (Pristiq)
  - Venlafaxine (Effexor) – anti-anxiety effects
  - **Duloxetine (Cymbalta)**
- Drug interactions more likely with fluoxetine, fluvoxamine, or paroxetine
- Drug interactions less likely with escitalopram, citalopram, or sertraline
- There are other types of antidepressants (TCA inhibitors, MAO inhibitors, etc), but these are rarely used in people with epilepsy

\* - technically not an SSRI, but similar....



# Side Effects of Antidepressants

- Loss of appetite/weight
- Drowsiness
- Dizziness
- Fatigue
- Headache
- Nausea
- Dry eyes and mouth
- Urinary retention
- Sexual dysfunction



# Antidepressants, continued

- Most “failures” of antidepressants occur because
  - the side effects weren’t tolerated
  - The dose was too low to be effective
- Talk to your doctor...
  - About the principle of “maximal tolerated dose”
  - About being patient... weeks to months needed to see an effect

# Epilepsy surgery and depression

- A recent study of patients who had epilepsy surgery:
  - 22% were depressed before surgery
  - 17% were depressed after surgery, if still having seizures
  - 8% were depressed after surgery, if not having seizures
- Vagus Nerve Stimulator
  - Initially developed as a treatment for epilepsy, but now FDA-approved for depression
  - Effectiveness is controversial, mechanism is poorly understood

# Suicide

- People with epilepsy are at higher risk of suicide than the average person
- There is some data that anticonvulsants and antidepressants can increase the risk of suicide slightly in young people! BUT....
  - This is extremely rare
  - The reasons are not understood (but theories abound)
  - The risks of untreated epilepsy or depression are much higher than the risk of suicide on antidepressants or anticonvulsants
- **Anyone who expresses thoughts about hurting himself or herself should be taken extremely seriously!**
- Contact a physician, emergency room, or hotline immediately if a depressed person:
  - discusses a specific plan to hurt himself or herself
  - gives away treasured items
  - suddenly begins making plans/arrangements for their absence in the future
  - It is okay to ask direct questions!

# Mental Health Support

## ASK FOR SUPPORT WHEN YOU NEED IT!

- Talk to someone about...
  - your stress, problems, worries
  - the disappointment you feel after a seizure
  - your frustration at having to pace yourself slower than others
  - the feeling of not being “normal” like everyone else
  - the anger or irritation you get from having to take all of your medications and their side effects

## DON' T BE AFRAID TO GET PROFESSIONAL HELP!

- Psychotherapy (counseling)
- Support groups

# Psychotherapy

## Types

Psychoanalytic (Freud), psychodynamic, cognitive-behavioral, mindfulness-based, short-term, long-term, etc.

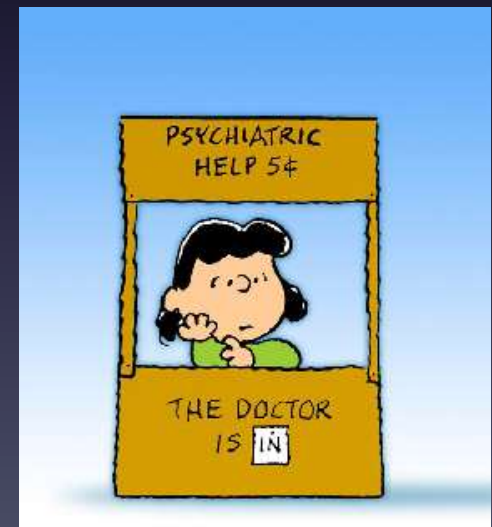
## Modalities

Individual (child, adolescent, adult), couples, family, group

## Counselors

-Licensed Clinical Social Worker, Marriage and Family Therapist, Psychologist, Psychiatrist

**\*\*\*Find the right counselor for YOU\*\*\***



# Group Support

## Living With Epilepsy

Open to all adults with epilepsy and any caregivers, families, and friends.

Every 2<sup>nd</sup> Monday of the month

11am-12:30pm

SFVA Epilepsy Center

Gil Woo





# Resources

- [www.epilepsy.com](http://www.epilepsy.com)
  - [www.epilepsynorcal.org](http://www.epilepsynorcal.org)
  - [www.epilepsyfoundation.org](http://www.epilepsyfoundation.org)
  - [www.epilepsyadvocate.com](http://www.epilepsyadvocate.com)
  - National Suicide Prevention Hotline: (800) 273-TALK
  - Veterans Suicide Prevention Hotline: (800) 273-TALK
- press 1



# Remember, there is always hope!

- Thanks to
  - Gil Woo
  - Brian Alldredge, PharmD
  - Paul Garcia, MD
  - The VA ECoE team
  - All of you for attending!

