

SIDE EFFECTS AND DRUG INTERACTIONS WITH SEIZURE MEDICATIONS

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Major seizure medications

- ❖ Phenobarbital (1912)
- ❖ Depakote (1978)
- ❖ Keppra (2000)
- ❖ Dilantin (1938)
- ❖ Felbatol (1993)
- ❖ Trileptal (2000)
- ❖ Zarontin (1954)
- ❖ Neurontin (1993)
- ❖ Zonegran (2000)
- ❖ Mysoline (1954)
- ❖ Lamictal (1994)
- ❖ Lyrica (2005)
- ❖ Klonopin (1960s)
- ❖ Topamax (1996)
- ❖ Vimpat (2009)
- ❖ Tegretol (1974)
- ❖ Gabitril (1997)
- ❖ Banzel (2009)

Most of these are totally chemically different from each other -- side effects vary widely

AED (antiepileptic drug) side effects

Q: Do you have to live with side effects from seizure medications?

A: No!!!

- ❖ Anything more than a minor nuisance should be unacceptable
- ❖ (There are rare exceptions to this rule)

Types of side effects

❖ Annoying

- ❖ Make you feel lousy, but quickly go away if the drug is stopped

❖ Dangerous

- ❖ Can be harmful, but quite rare

❖ Insidious

- ❖ Come on slowly and/or gradually
- ❖ These may be the biggest problem

Reasons not to live with medicine side effects

- ❖ You have to take these drugs for years
- ❖ High doses usually don't work much better than low doses
- ❖ We have LOTS of options
- ❖ Drugs almost all chemically different with different side effect profiles
- ❖ Most patients have consistent drug responses with regard to seizures

Annoying side effects

- ❖ **Dizziness/unsteadiness** - many drugs
- ❖ **Fatigue/tiredness** - many drugs
- ❖ **Nausea** - many drugs (Depakote)
- ❖ **Tremor** - Depakote
- ❖ **Tingling** - Topamax, Zonegran

Dangerous side effects

- ❖ **Abnormal liver function**
 - ❖ Dilantin, Phenobarb, Depakote, Felbatol
- ❖ **Low blood counts**
 - ❖ Dilantin, Tegretol, Phenobarb, Depakote, Felbatol
 - ❖ Can cause bleeding, infection
- ❖ **Rash** - Dilantin, Tegretol, Phenobarb, Lamictal, Trileptal
 - ❖ Make sure it's drug-related!
- ❖ **Vast majority not threatening, occasionally dangerous**
- ❖ ***All of these happen within the first few months***

Drug interactions

- ❖ Seizure medicine affecting other drugs
- ❖ Other drugs affecting seizure medicines
 - ❖ Increase or decrease its breakdown
- ❖ Some other mechanisms for drug interactions
- ❖ Largely among older drugs
 - ❖ Phenobarb, Dilantin, Tegretol, Depakote, Mysoline

Insidious side effects

- ❖ Visible
 - ❖ **Depressed mood, irritability** - Keppra
 - ❖ **Thinking problems** - Topamax, Phenobarb, others
 - ❖ **Changes in weight** - Depakote, Lyrica, Topamax, Zonegran
 - ❖ **Insomnia** - Lamictal
- ❖ Invisible - Dilantin, Tegretol, Phenobarb, Mysoline
 - ❖ **Elevated cholesterol**
 - ❖ **Bone loss**
 - ❖ **Vitamin deficiency**

Enzyme inducers

- ❖ Dilantin, Tegretol, Mysoline, Phenobarb,
- ❖ Increase liver activity, breakdown other drugs, reduce effectiveness
 - ❖ Trileptal, Topamax can also be inducers, but to a much lesser extent
- ❖ Changes metabolism a lot -- may contribute to long-term problems

Not everything is from the medicine

- ❖ Effects of seizures
 - ❖ Memory difficulty
- ❖ Other conditions that go along with seizures
 - ❖ Depression
 - ❖ Headaches
- ❖ Coincidence

Depakote

- ❖ Enzyme inhibitor: decreases liver activity
- ❖ Reduces breakdown of drugs, increase drug effects
- ❖ Also seems to be associated with metabolic changes
 - ❖ Weight gain, pre-diabetes (elevated blood sugar)
 - ❖ Bone loss

Some drugs affected by older AEDs

- ❖ **Cholesterol medications**
(Zocor, Lipitor)
- ❖ **Cardiac medications**
(Lasix, Coumadin, digoxin)
- ❖ **Psychiatric medications**
(Wellbutrin, Pamelor,
Risperdal, Seroquel)
- ❖ **Immune suppressants**
(prednisone, Decadron,
cyclosporine)
- ❖ **Pain medications**
(Tylenol, Demerol,
methadone)
- ❖ **Antibiotics**
(doxycycline, itraconazole)
- ❖ **Cancer chemotherapy**
(vincristine, Cytosan)