**SIDE EFFECTS AND DRUG INTERACTIONS WITH SEIZURE MEDICATIONS**

Scott Mintzer, MD  
Jefferson Comprehensive Epilepsy Center

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)

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

**AED (antiepileptic drug) side effects**

**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

**Major seizure medications**

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

**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)

- **Psychiatric medications**
  (Wellbutrin, Pamelor, Risperdal, Seroquel)

- **Pain medications**
  (Tylenol, Demerol, methadone)

- **Cancer chemotherapy**
  (vincristine, Cytoxan)

- **Cardiac medications**
  (Lasix, Coumadin, digoxin)

- **Immune suppressants**
  (prednisone, Decadron, cyclosporine)

- **Antibiotics**
  (doxycycline,itraconazole)