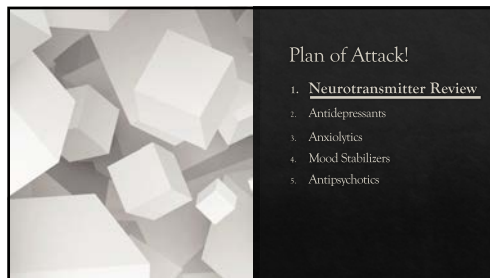




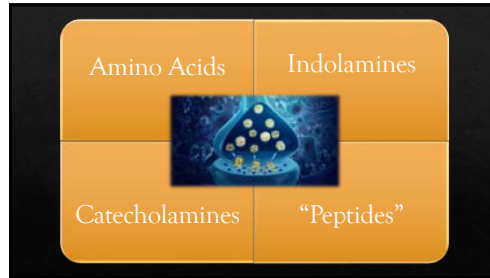
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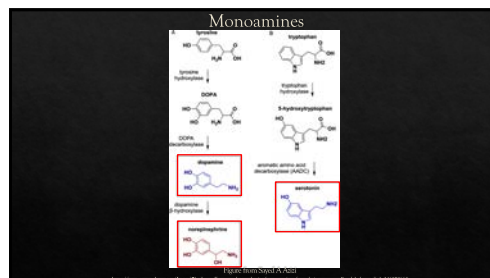
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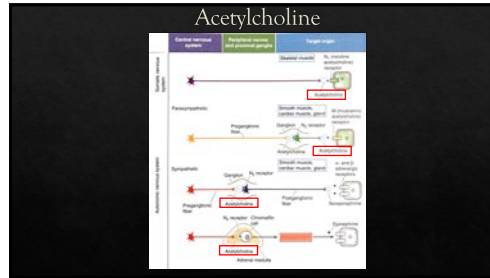
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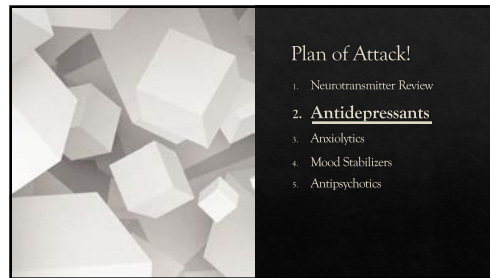
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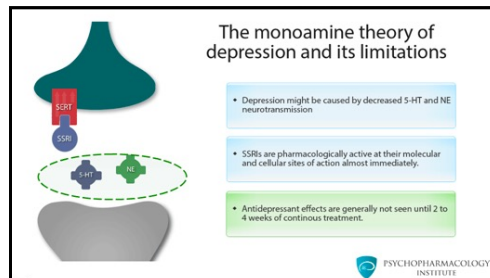
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Monoamine Oxidase Inhibitors (MAO-Is)

- ◆ Phenelzine
- ◆ Selegiline
- ◆ Isocarboxazid
- ◆ Tranylcypromine



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Tricyclic Antidepressants

Inhibits Serotonin reuptake	Inhibits Norepinephrine reuptake
Clomipramine Imipramine	Nortriptyline Desipramine
Amitriptyline Doxepin	

- ◆ Second line: Depression, GAD, etc
- ◆ Primary uses: Chronic pain
- ◆ Side effects: anticholinergics, sodium channel blockade, "discontinuation syndrome"

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Selective Serotonin Reuptake Inhibitors

- ◆ Citalopram (Celexa)
- ◆ Escitalopram (Lexapro)
- ◆ Fluoxetine (Prozac)
- ◆ Fluvoxamine (Luvox)
- ◆ Paroxetine (Paxil)
- ◆ Sertraline (Zoloft)



First Line: Major Depression, GAD, panic disorder, OCD, PTSD, eating disorders

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Serotonin Norepinephrine Reuptake Inhibitors (SNRIs)

- ◊ Venlafaxine (Effexor)
- ◊ Duloxetine (Cymbalta)
- ◊ Milnacipran
- ◊ Tramadol

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Mirtazapine
Serotonin and NE (?)
Often combined with SNRI

Trazodone
Orthostasis
Priapism

"Other"

Bupropion
NE + Dopamine
C.I. in seizures and
Eating disorders

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Plan of Attack!

1. Neurotransmitter Review
2. Antidepressants
3. Anxiolytics
4. Mood Stabilizers
5. Antipsychotics

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Benzodiazepines

<p><u>Mechanism of Action</u> GABA receptor stimulation</p> <p><u>Side Effects</u> Respiratory Depression Delirium Dependency Withdrawal</p>		<p><u>Uses</u> Anxiety Acute agitation Alcohol withdrawal Seizures</p>
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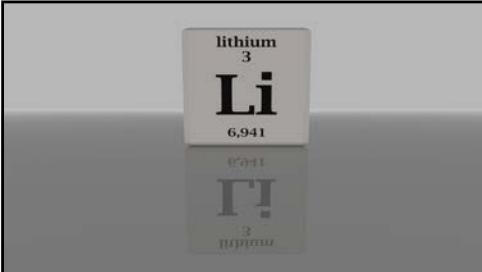
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Plan of Attack!

1. Neurotransmitter Review
2. Antidepressants
3. Anxiolytics
4. Mood Stabilizers
5. Antipsychotics

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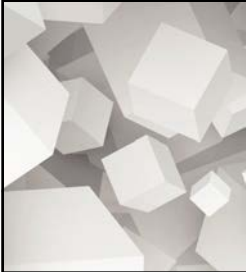


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Anticonvulsants

 <p style="text-align: center;">Hepatotoxic Pancreatitis</p>	 <p style="text-align: center;">Danger rashes</p>	 <p style="text-align: center;">Aplastic anemia Agranulocytosis Danger rashes</p>
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Plan of Attack!

1. Neurotransmitter Review
2. Antidepressants
3. Anxiolytics
4. Mood Stabilizers
5. Antipsychotics

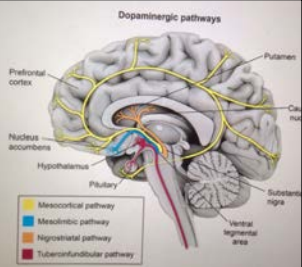
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Dopamine Theory

Meso = Midbrain
Cortical = Cortex
Limbic = Limbus system

Nigro = Substantia Nigra
Striatal = Basal Ganglia

Tubero = Hypothalamus
Infundibular = Pituitary




■ Mesocortical pathway
■ Mesolimbic pathway
■ Nigrostriatal pathway
■ Tuberoinfundibular pathway

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Typical Antipsychotics

D2 Antagonism	Example	ADRs
Low	Thioridazine Chlorpromazine	Sedation, Postural Hypotension
High	Haloperidol Fluphenazine	Extrapyramidal symptoms



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But why do we care???

1. First line now
2. Dirty Drugs
3. Serotonin syndrome
4. Sedation
5. Postural Hypotension

Atypical antipsychotics

Drug	D1	D2	5-HT2	α	M1	H1
Chlorpromazine	++	++	+++	+++	+++	+
Risperidone	-	+++	+++	+++	-	+
Haloperidol	++	+++	+++	+++	+++	++
Quetiapine	-	+	+	+	+	+
Ziprasidone	+/+	+++	+++	+++	+	+
Aripiprazole	+	+++	++	+	-	+

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC211166/>

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ExtraPyramidal Symptoms

Signs	Description	Treat	Treatment
Acute dystonia	Unilateral postural muscle contractions or spasms (eg. torticollis, laryngospasm, etc.)	None	Anticholinergics or diphenhydramine are usually the drugs of choice for acute dystonia. Anticholinergics may also be given to improve muscle relaxation during the benzodiazepines.
Dyskinesia	Postural tremor, rigidity, shuffling gait, repetitive tongue.	None	Donepezil, a cholinesterase inhibitor, is a treatment option. It has been shown to be effective in the treatment of tardive dyskinesia.
Muscle rigidity	Subacute muscle stiffness that is generalized and is not relieved by warming.	None	It is usually treated by 20 mg of benztropine or 2 mg of diphenhydramine. Benzodiazepines are also helpful in the treatment of acute dystonia.
Tardive dyskinesia	Choreiform, compulsive, repetitive and facial movements. Usually from dopamine receptor overstimulation from chronic dopamine blockade after neuroleptic therapy.	None	Discontinuation of the drug of neuroleptic, alternate treatment with more appropriate drugs, and consider changing neuroleptic drug. Anticholinergics are helpful in the treatment of acute dystonia. They may worsen tardive dyskinesia.
Neuroleptic malignant syndrome	Febrile, muscle rigidity, autonomic instability, elevated CPK and ECG, altered consciousness.	Aggressive	Drug withdrawal, provide supportive care to the ICU, benzodiazepines or bromocriptine.

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Questions?

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Summary

- Neurotransmitter Review
 - GABA and Glutamate
 - Monoamines
 - "Other"
- Antidepressants
 - SSRIs
 - SNRIs
 - TCAs
 - MAOIs
 - Other
- Anxiolytics
 - Benzodiazepines
- Mood Stabilizers
 - Lithium
 - Anticonvulsants
- Antipsychotics
 - First generation (typical)
 - Second generation

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References

- ◆ Tintinalli's 8th edition
- ◆ BRS Pharmacology 6th edition
- ◆ The Human Brain An Introduction to Functional Anatomy by John N. P. Gray 6th edition
- ◆ First Aid for Step 1
- ◆ First Aid for Step 2CK
- ◆ DSM V
- ◆ Boron and Boulpaep's Medical Physiology 2nd ed

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