

NEURO pharmacology

NERVOUS SYSTEM

1. Peripheral NS
2. Central NS
 - ↳ BRAIN & SPINAL CORD

SYMPATHETIC NS

Protects body during danger & stress

PARASYMPATHETIC NS

Regulates the tasks of the body

NEUROTRANSMITTERS THAT AFFECT THE BODY

1. Histamine
2. GABA
3. Acetylcholine
4. Serotonin
5. Dopamine

NEUROTRANSMITTERS THAT STIMULATES ADRENERGIC RECEPTORS

1. Epinephrine
2. Norepinephrine

DRUG THERAPY OF NEURO SYSTEM DISORDERS

1. Alter CNS
2. Regulate Neurotransmitters

Amphetamines → Adderall

Side affects

- Hypertension
- Allergic

CHOLINESTERASE INHIBITORS

NSAID's = GI bleeds

Obstruct enzymes, breakdown acetylcholine

Results in higher concentrations of acetylcholine, leading to increased communication between nerve cells.

1. Aricept
2. Exelon
3. Razadyne

NMDA RECEPTORS ANTAGONIST WORK WITH ALZHEIMER'S

Slow / decline of cognitive & physical function

1. Memantine
2. Namenda

ANTIDEPRESSANTS

14 day medication transition; can not take together

1. Tricyclins (TCA'S) Take at night
2. MAOI'S No Tyramine in diet
3. SSRI'S
4. Atypical

BENZODIAZEPINES PROTOTYPES

1. Valium
 2. Xanax
- toxicity signs&symptoms
1. Hypotension
 2. Tachycardia
 3. Depressed Resp.

MUST TAPER OVER 1-2 WKS

Withdrawal symptoms

BENZODIAZEPINES THAT TREAT ANXIETY

1. Serax
 2. Tranxene
 3. Librium
 4. Ativan
1. Insomnia
 2. Anxiety
 3. Tremors
 4. Dizziness
 5. Hypertension
 6. Panic
 7. Seizures
 8. Hallucinations

Antidote = Flumazeril

MOOD STABILIZERS

1. Lithium
 - Monitor lithium levels
 - Side affects
 - Fluid intake
 - I's&O's
 - Maintain sodium balance
- Tx: Bipolar

ANTIDEPRESSANTS

KEY: Take 2-4 WKS to take full effect

THINK: 4 letters in "SSRI" → 4 WKS

> RISK FOR SUICIDE

① SSRI'S (SELECTIVE SEROTONIN REUPTAKE INHIBITORS)

ACTION: Inhibit the reuptake of serotonin back into the neuron → more serotonin floating around in the brain → improve mood

SIDE EFFECTS: weight gain, insomnia, sexual dysfunction

RISK: serotonin syndrome → Agitation, hallucinations, fever, tremors, sweaty

SUFFIX: -TINE, -LINE, -PRAM

② SNRI'S (SEROTONIN-NOREPINEPHRINE REUPTAKE INHIBITORS)

ACTION: Inhibit the reuptake of serotonin AND norepinephrine into the neuron → more floating in the brain

SIDE EFFECTS: loss of appetite, insomnia, sexual dysfunction

③ TCA'S (TRICYCLIC ANTIDEPRESSANTS) -TRYPTLINE -IPRAMINE

ACTION: TRI= 3 actions → 1. Inhibit serotonin reuptake

USE: depression

anxiety

insomnia

fibromyalgia

2. Inhibit norepinephrine reuptake

3. Inhibit Alpha receptors → orthostatic hypotension

Histamine → sedation

Muscarinic receptors → anticholinergic sx

SIDE EFFECTS: All of these ↗
+ urinary retention

KEY: Be careful in the sun ("cycle") → ↑ fiber / ↑ fluids

④ MAOI'S (MONOAMINE OXIDASE INHIBITORS)

Phenelzine
Ex: Isocarboxazid

ACTION: Blocks the destruction of serotonin, norepinephrine, dopamine and TYRAMINE → increase ALL of these in the brain

USE: Depression, panic disorder

SIDE EFFECTS: Agitation, anxiety, ↓BP, HYPERTENSIVE CRISIS (interacts with many meds) DO NOT EAT TYRAMINE FOODS!! (chocolate, avo, wine, cheese)

⑤ ATYPICALS

A. Bupropion (Wellbutrin) → for depression + smoking cessation

B. Trazadone → for depression (high dose) + insomnia

ANTI ANXIETY MEDS

① BENZODIAZEPINES (-PAM, -LAM)

ACTION: Bind to GABA receptors to enhance the action of GABA

GABA: Neurotransmitter that slows (calms) the speed of brain activity

SIDE EFFECTS: sedation, ↓RR, ↓BP, ↓HR, amnesia

🔑 **KEY: FAST ACTING** (Think: Pam is riding in a Benz, which is fast) →
short term use only! can cause **DEPENDENCY** Antidote: Flumazenil

② SSRI'S (SELECTIVE SEROTONIN REUPTAKE INHIBITORS)

ACTION: see Antidepressants

USE: Anxiety, depression, PTSD, OCD (Think: Teens (-tine) have a lot of anxiety)

SIDE EFFECTS: weight gain, insomnia, sexual dysfunction

4WKS for full effect!

🔑 **KEY:** Do not take with St. Johns Wort

SUFFIX: -TINE, -LINE, -PRAM

③ ATYPICALS - BUSPIRONE

USE: Anxiety, PTSD, OCD, Panic

1-2WKS for full effect!

SIDE EFFECTS: Dizzy, headache, nausea

🔑 **KEY:** Does **NOT** cause sedation **OR** dependency!
Take with **FOOD** if GI upset

④ OTHERS: TRICYCLIC ANTIDEPRESSANTS

BETA BLOCKERS

BARBITUATES (-barbital) = stays in system for 3-5 days

ANTI PSYCHOTICS

KEY: For all psychiatric conditions:

DOPAMINE (Think "DOP")

D: Determination for a reward

O: Obsession (addicting)

P: Pleasure

NOREPINEPHRINE (Think "NOR")

N: No hesitation ↑HR ↑BP

O: On Alert

R: Recall is good!

SEROTONIN (Think "SER")

S: sleep

E: emotion

R: Remember (good memory)

MOOD STABILIZERS

USE: For the treatment of BIPOLAR DISORDER

① LITHIUM

ACTION: Helps reduce severity and frequency of manic episodes

> unknown how it does this (may inhibit MOA → ↑ activity of the brain)

SIDE EFFECTS: LEUKOCYTOSIS!

increased urination / thirsty

tremors, hypothyroidism

nausea, fatigue

> similar to SALT → **DO NOT** cut out salt from your diet (↑ Risk Toxicity)

THERAPEUTIC RANGE: 0.6-1.2 mEq/L

> weekly blood draws until levels are steady → then 3mo intervals

> **Monitor for salt loss** → Fever, sweating, diarrhea

> Teratogenic

> 1-3 WKS for full effect

② ANTICONVULSANTS

> Valproic Acid → Acute mania attack preferred over lithium due to less side effects

> carbamazepine → Agranulocytosis

> lamotrigine

③ ANTIPSYCHOTICS

> olanzapine

> Risperidone

> Aripiprazole

④ BENZODIAZEPINES (-PAM, -LAM)