Psychopharmacology
An Overview

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Disclaimer and legal stuff

This presentation is informational only. It does not serve nor substitute for medical decision making. Author is not responsible for any outcomes based on the contents of this presentation.

I am able to answer general questions about medicines. I cannot answer specific questions about patients, situations, or outcomes.

Overview

- Depression
- Postpartum
- Anxiety disorders
- PTSD
- Special comments on benzodiazipines
- Bipolar disorder
- Schizophrenia/Schizoaffective Disorders
- Sleep Disorders
- Attention Deficit Disorders
- Special Populations-Pregnancy, Pediatrics, Medically Ill
- Substance Use Disorders Including Medication Assisted Treatment
- Working As a Team: Effective Communication

Major Depression

- Treatment Categories
- SSRIs (first and second generation)
- SNRIs
- NDRIs
- Tricyclics
- MAOs
- “Other”
- Augmentation Strategies
- Interventional: ECT, rTMS, Spravato/Ketamine

Overview of Terms

Serotonin

Norepinephrine

Dopamine

Overview of Terms

GABA

Glutamate

Brain-Derived Neurotropic Factor

Overview of Terms

Tolerance

Withdrawal

Overview of Terms

- ½ life
- CYP liver enzymes
- Isomer (R vs S) and Enantiomers(L vs D)
- Metabolite (Pristiq-Desvenlafaxine)

L vs D and R vs S???

L (laevorotatory)medicines refract light anticlockwise (LEVOTHYROXINE)

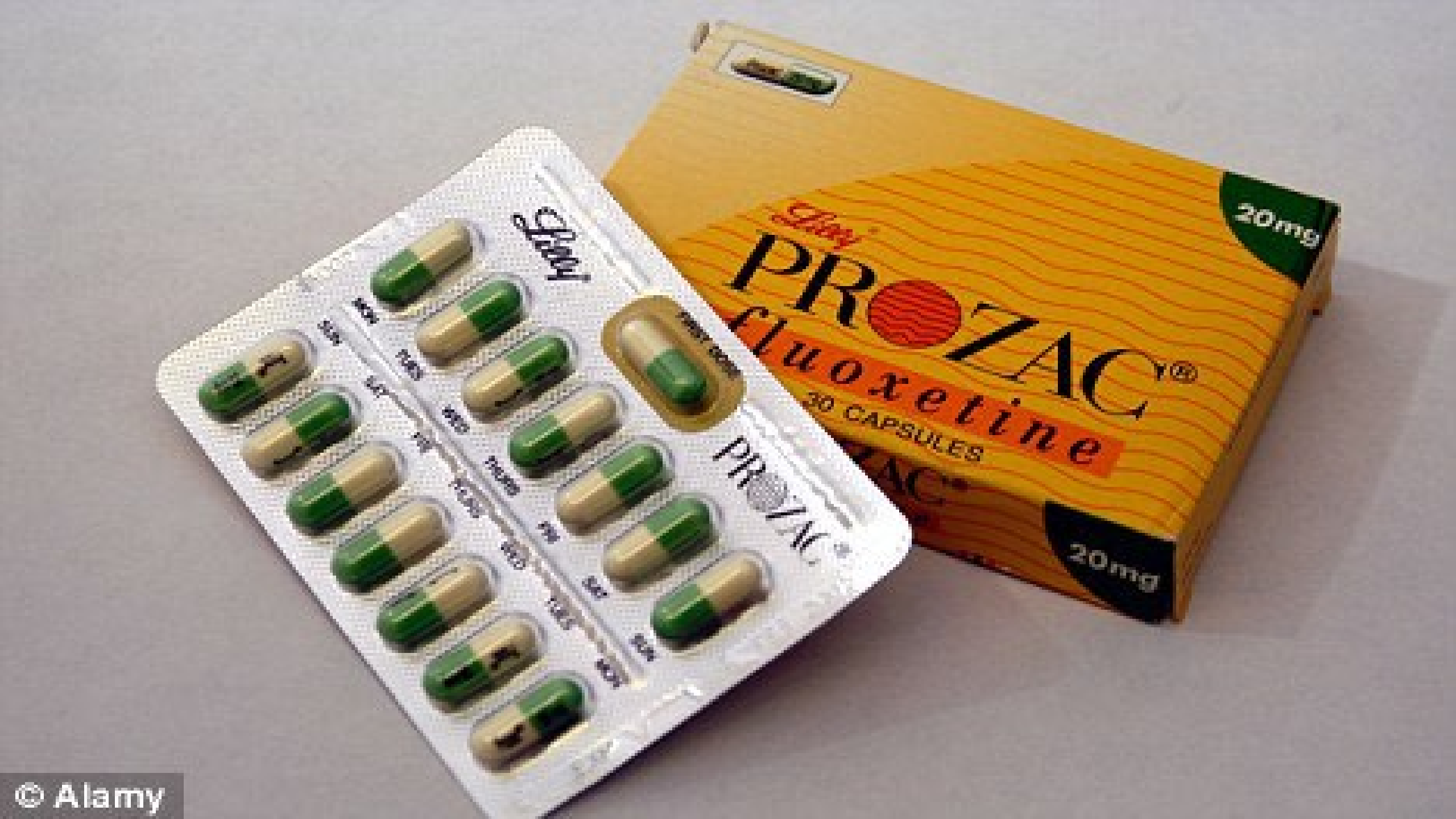
D (dextrorotatory) medicines refract light clockwise (DEXEDRINE)

R (rectus) medicines have the relative direction of the priority order clockwise (ARMODAFANIL)

S (sinister) medicines have the relative direction of the priority order counterclockwise (LEXAPRO, SPRAVATO

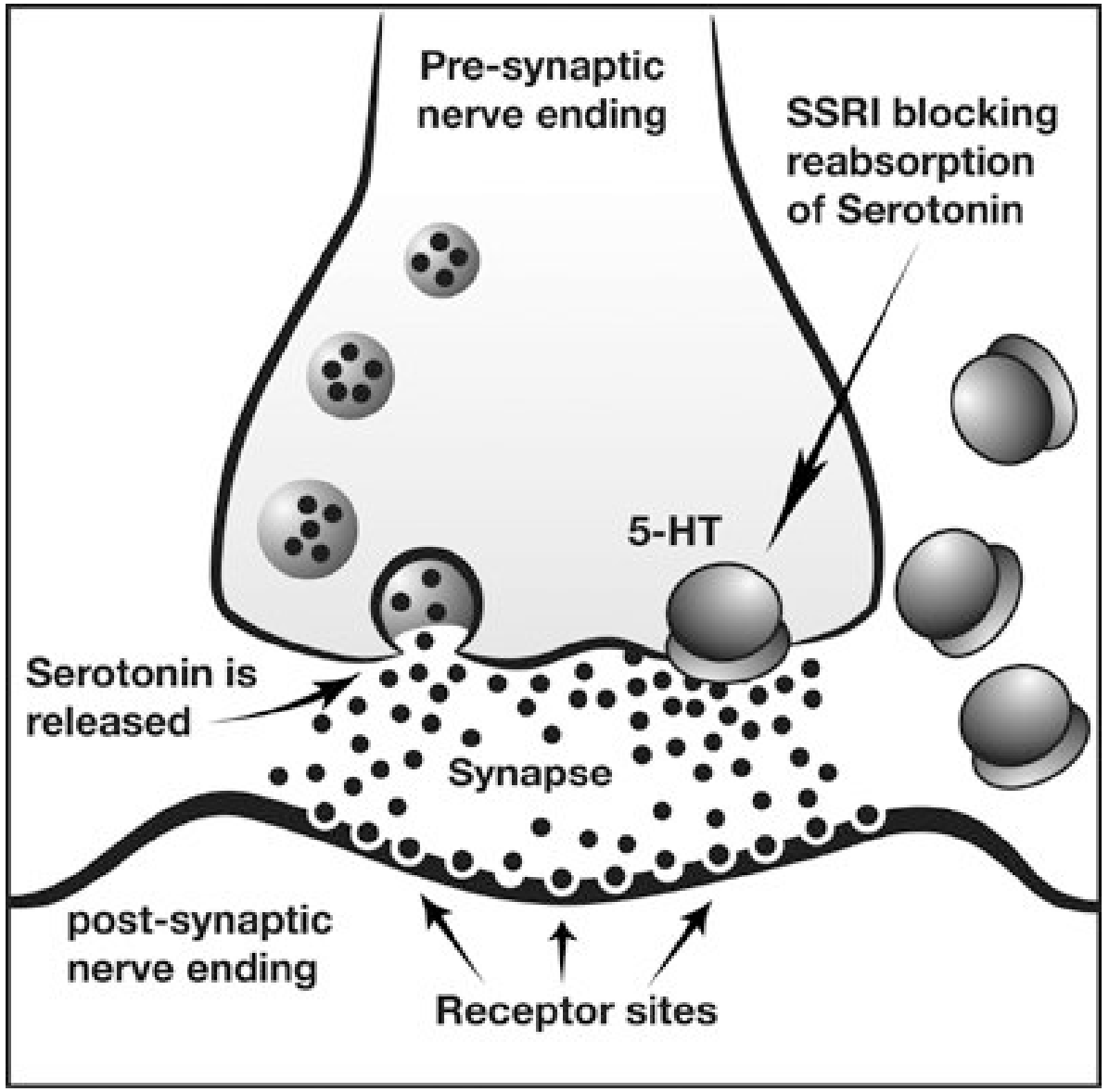
SSRIs

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



SSRIs

- Most commonly prescribed medicines for depression
- Very safe—safest class of antidepressants
- Safer than but not as efficacious as MAO, TCA, possibly SNRI
- Lower doses for major depression, higher doses for anxiety disorders
- Long term safety appears certain


Pre-synaptic
nerve ending
SSRI blocking
reabsorption
of Serotonin
5-HT
Serotonin is
released
Synapse
post-synaptic
nerve ending
Receptor sites

SSRIs continued

- Some forms relatively safe in pregnancy (favor Zoloft, Lexapro)
- Several (Prozac, Zoloft, Lexapro, luvox) FDA indicated for children
- Safest antidepressant option for the medically ill and geriatric patients

SSRI Continued

Side effect profile: weight gain, sexual side effects, restless legs, GI side effects, fatigue

Special note that Paxil must be tapered to avoid discontinuation effects (including Paxil CR)

Metabolized by various liver enzymes

SSRI Metabolism

CYP450 2D6—Prozac, Paxil

CYP450 2C19—Zoloft, Lexapro, Celexa

CYP450 1A2--Luvox

Antidepressant Black Box Warning

Antidepressants increased the risk compared to placebo of suicidal thinking and behavior (suicidality) in children, adolescents, and young adults in short-term studies of Major Depressive Disorder (MDD) and other psychiatric disorders. anyone considering the use of xxxxx or any other antidepressant in a child, adolescent, or young adult must balance this risk with the clinical need...

	MDD	GAD	OCD	Bulimia	Panic	Social	PMDD	PTSD
Prozac	X		X	X	X			
Zoloft	X		X		X	X	X	X
Paxil	X	X	X		X	X		X
Celexa	X							
Lexapro	X	X						
Luvox			X					
Effexor XR	X	X			X	X		
Cymbalta	X	X						
Pristiq	X							
Emsam	X							
Remeron	X							

Second Generation SSRIs

- Viibryd and Trintillix
- FDA indicated for Major Depression
- Very expensive, may confer superior efficacy but head to head is limited
- Trintillix also with FDA indication for improving/maintaining processing speed in the elderly

SNRIs

Venlafaxine (Effexor, Effexor XR),
Duloxetine (Cymbalta),
Desvenlafaxine (Pristiq)

Dual action on Serotonin and Norepinephrine, with higher serotonin action at lower doses and more norepinephrine activity at higher doses

Serotonin-norepinephrine reuptake inhibitors (SNRIs)

- MOA : Inhibit the reuptake of both 5-HT and NE , Venlafaxine and desvenlavfaxine are potent inhibitor of 5-HT reuptake and, at medium to higher doses, is an inhibitor of NE reuptake

Duloxetine inhibit serotonin and norepinephrine reuptake at all doses.

Uses

- treating depression in patients where SSRIs are ineffective
- Effective against chronic painful symptoms, such as backache and muscle aches (This pain is modulated by 5-HT and NE pathways in the CNS)

SNRI Continued

Discontinuation effects are pronounced (it's like having the flu at 180 MPH); must taper these medicines

Other side effects: sexual side effects, insomnia, dry mouth/eyes, constipation, appetite changes

What Happens During Cymbalta Withdrawal?

Nausea and dizziness

Vomiting

Nightmares

Irritability

Anxiety

Strange sensations

Tricyclic Antidepressants

- Amitriptyline (Elavil)
- Amoxapine (Asendin)
- Desipramine (Norpramin)
- Doxepin (Sinequan, Silenor)
- Imipramine (Tofranil)
- Nortriptyline (Pamelor)
- Protriptyline (Vivactil)
- Trimipramine (Surmontil)

TCA's continued

- Work on Serotonin and Norepinephrine
- Older class of medicines used primarily for major depression, OCD (clomipramine), and sleep (doxepin especially as Silenor)
- Very effective, especially for classic depression

TCA SIDE EFFECTS

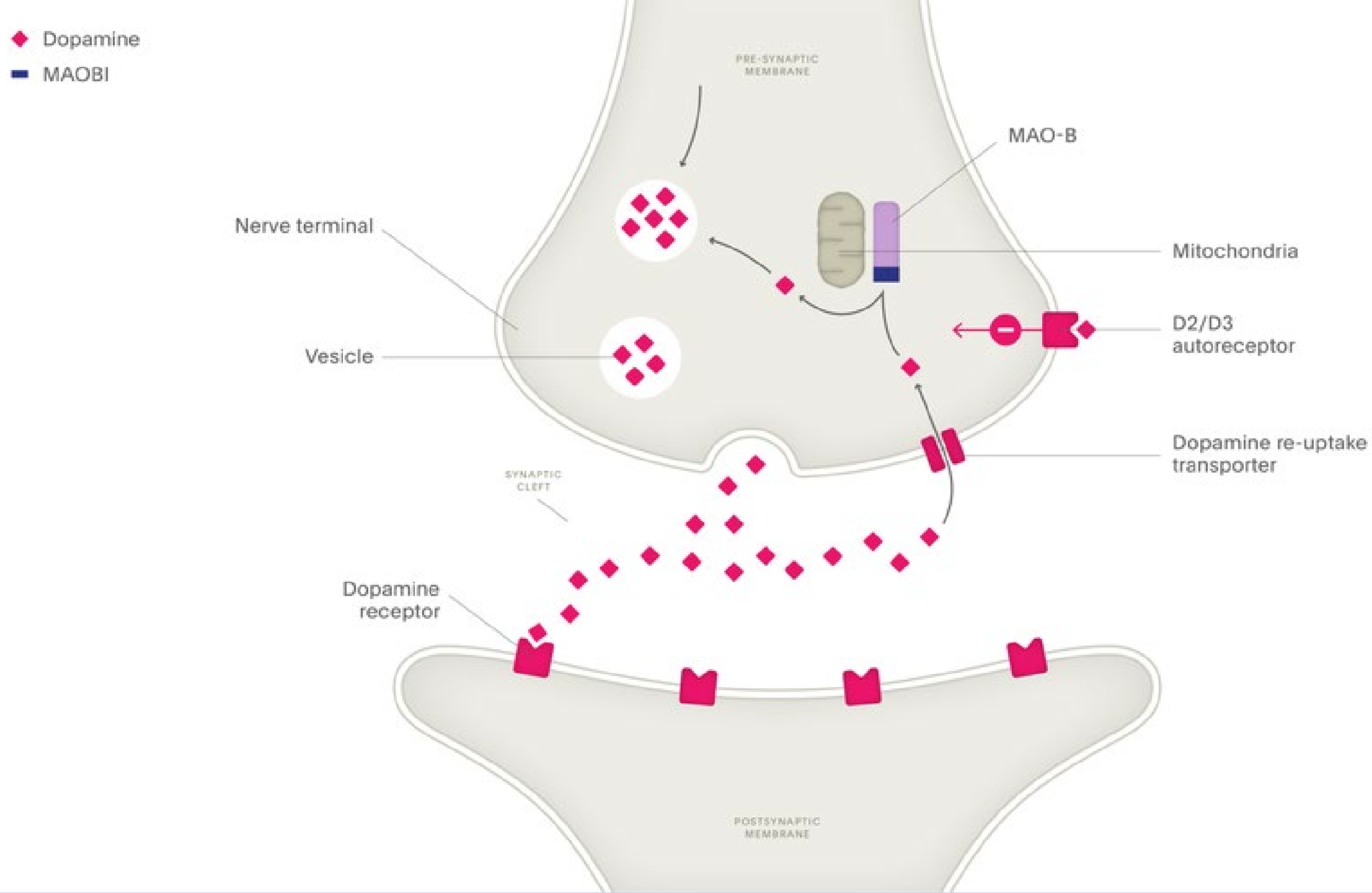
- Cardiac Arrythmia
- High Overdose morbidity/mortality rate
- Multiple Interactions
- Possible dementia risk (with the exception of Silenor)
- Urinary retention
- Confusion in the elderly

MAO Inhibitors

Work on Serotonin, Norepinephrine, Dopamine

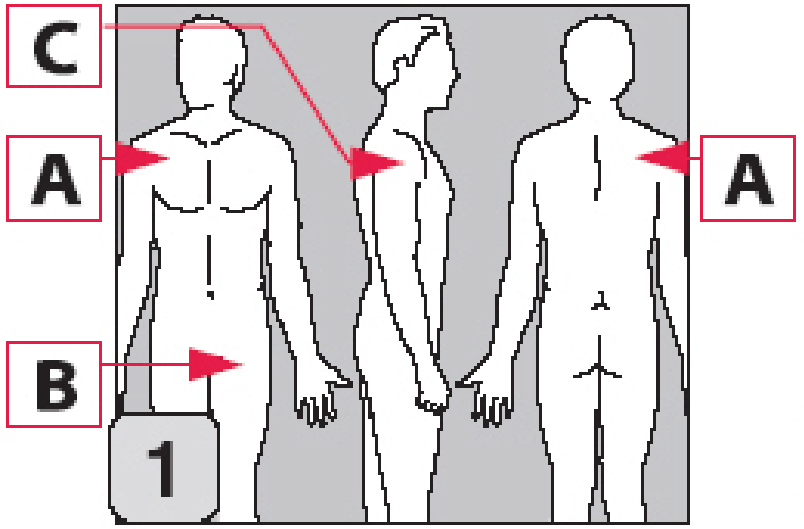
Gold standard for depression efficacy in a medicine

Probably the most effective class of medicine for major depression, especially atypical depression


Dopamine
MAOBI
PRE-SYNAPTIC MEMBRANE
MAO-B
Nerve terminal
Mitochondria
Vesicle
D2/D3 autoreceptor
Dopamine re-uptake transporter
SYNAPTIC CLEFT
Dopamine receptor
POSTSYNAPTIC MEMBRANE

MAO Inhibitors Continued

- Multiple medicine interactions
- Food interactions, especially with oral forms
- Newer MAO, Emsam, patch with fewer medicine and food interactions; highly effective but expensive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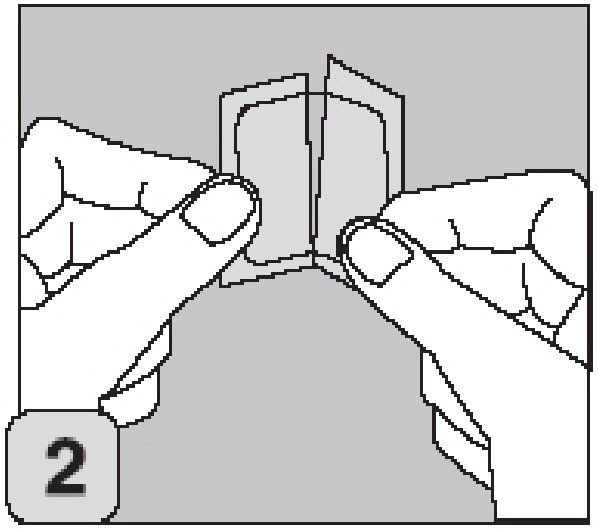
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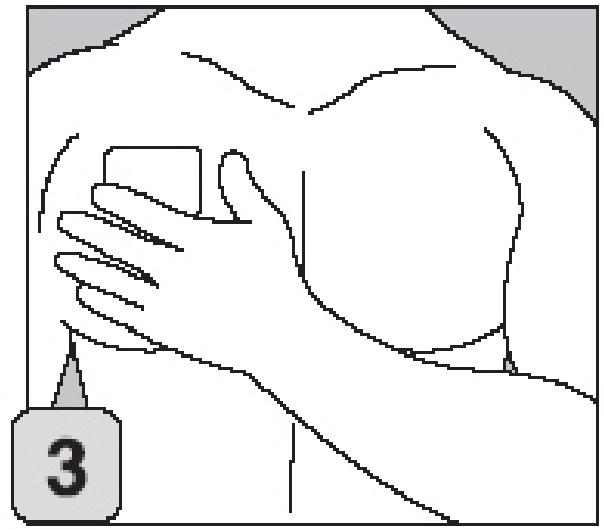
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Norepinephrine Agents

- Buproprion (Wellbutrin, Wellbutrin SR, Wellbutrin XL, Forfivo, Aplenzin), Levomilnacipran (Fetzima),
- Most effective for atypical depression, can cause anxiety
- Side effects: insomnia, weight loss
- Buproprion has a seizure warning
- Buproprion metabolizes at 2B6 and inhibits 2D6

Other Antidepressants

- Mirtazapine (Remeron) works on serotonin, histamine, and low binding on dopamine, muscarinic cholinergic receptors
- Unique binding profile makes it one of the safer options for older patients
- Helps with sleep, has weight gain as a side effect
- Metabolized at 2D6, 1A2, 3A4)

Augmentation Strategies for Major Depression

- Antipsychotics
- Antiseizure Medicines
- Deplin/Vitamins
- Multiple antidepressants (most commonly SSRI with Wellbutrin)
- Controversial: dopamine agents—Stimulants, wake promoting agents

A Word on Genetic Testing for Meds

- There is NO genetic test that will reveal what antidepressants will work
- Genetic tests indicate metabolism patterns
- Emerging data regarding serotonin receptor morphology
- Insurance prohibitions, 23andMe

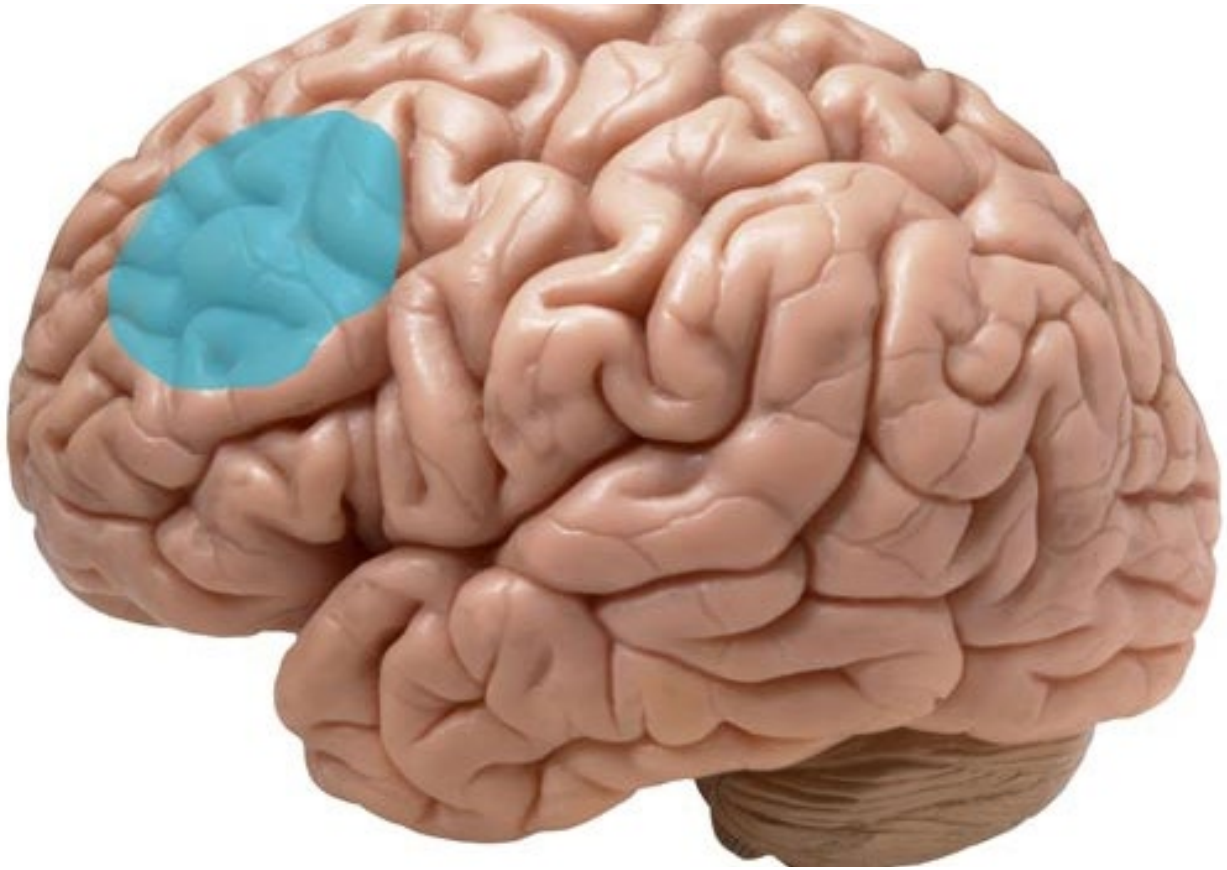

NeuroStar
33:26
Standard
0 sec
359
STOP
NeuroStar

Interventional Psychiatry- rTMS

Repetitive Transcranial Magnetic Stimulation

Designed to address major depression

Creates neuroplasticity leading to enduring changes in the left dorsolateral prefrontal cortex

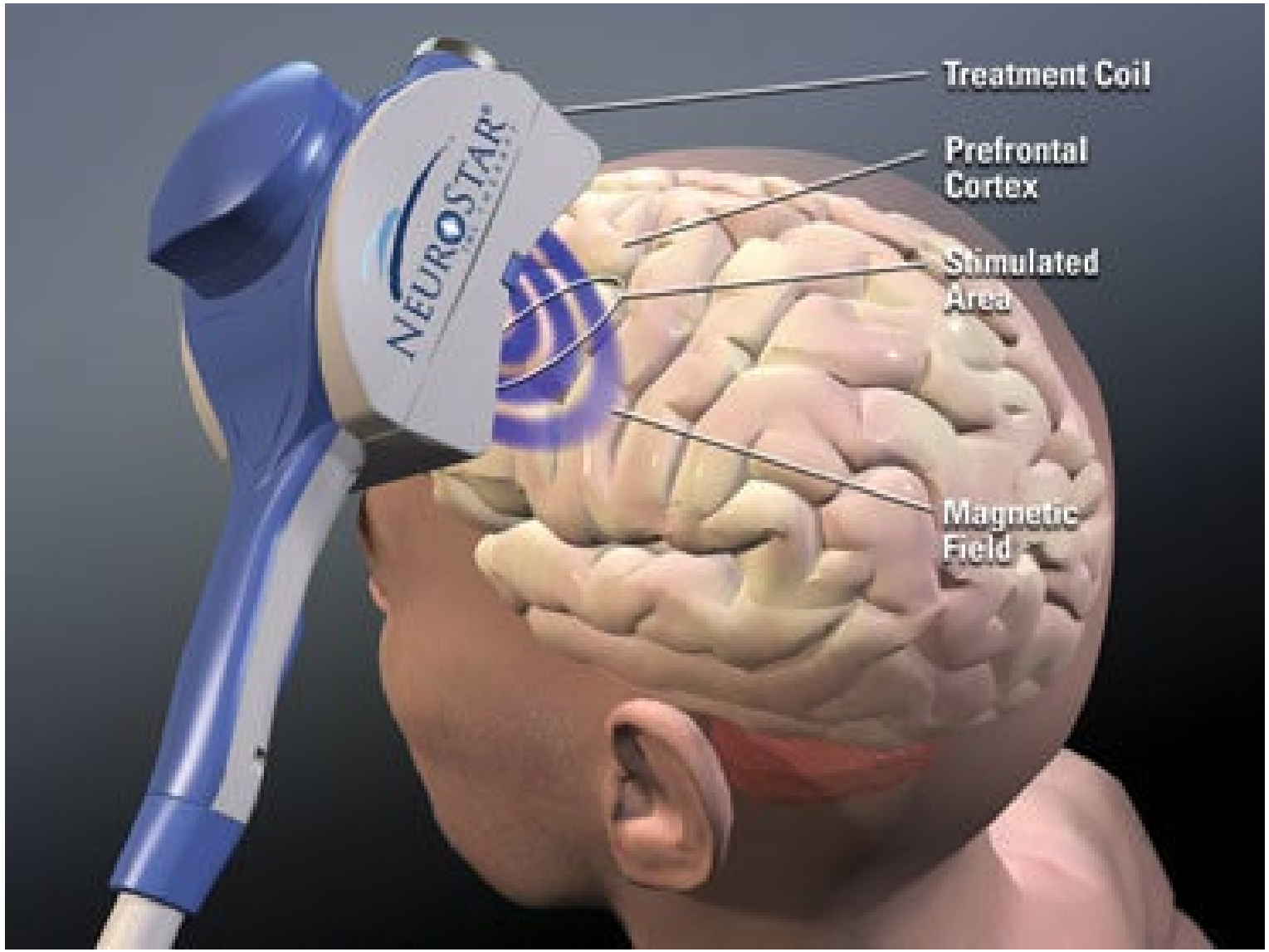


Dorsolateral Prefrontal Cortex

- Responsible for:

- Decision making
- Novelty detection
- Working memory
- Conflict management
- Mood regulation
- Mind processing
- Timing

rTMS coil targeting Dorsolateral Prefrontal Cortex



rTMS

Roughly 30-36 treatments over 6-8 weeks, treatments about 20 minutes long

Side effects: headache during/after treatment (tension type), scalp tenderness

rTMS Contraindications

- Seizures
- Pacemakers (possible to do with VNS pacemakers for depression)
- metal in head/neck area
- of stroke or other neuro-anatomical or neurovascular compromise

rTMS

- Safe
- Effective
- Relatively convenient
- Covered by most insurances
- New protocol: 17-18 minute treatments

ECT

- Electroconvulsive Therapy
- Current treatment is applied to right hemisphere
- Series of treatments, generally 6-12 over 3-4 weeks
- Induces a controlled series of seizures to alter neural communication and plasticity
- Enduring efficacy for depression

ECT Continued

Side effects: Transient confusion, memory loss for the time around the treatment, nausea, headache, jaw pain, muscle ache

Logistics are challenging as must involve anesthesia, performed at a hospital setting

ECT is significantly underutilized. It has a stigma based on historical application as well as misconceptions regarding its mechanism of action and side effects

Who is ECT For?

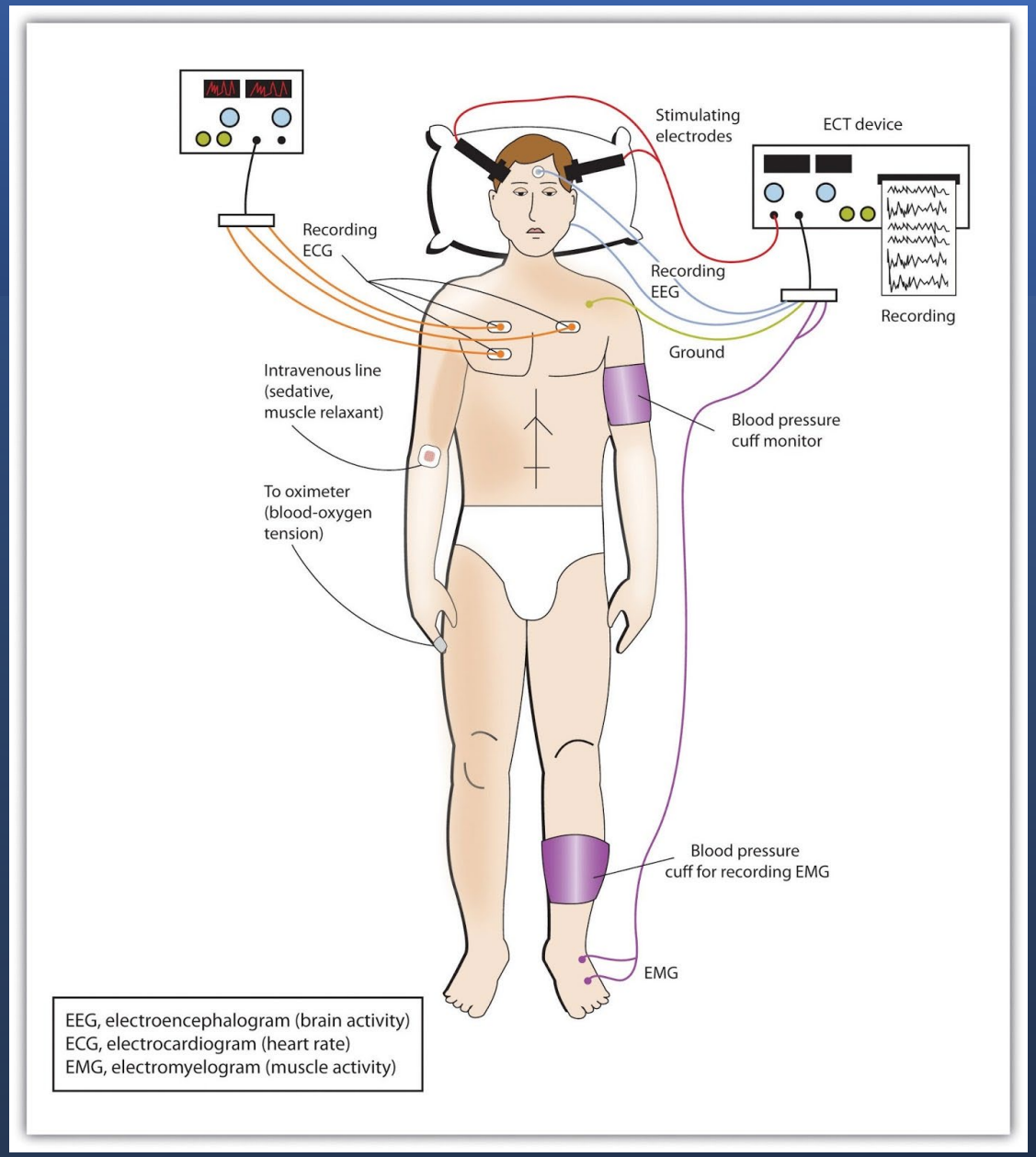
- Severe depression with psychosis, suicidal risk or refusal to eat
- Treatment-resistant depression
- Severe mania
- Catatonia
- Agitation and aggression in people with dementia

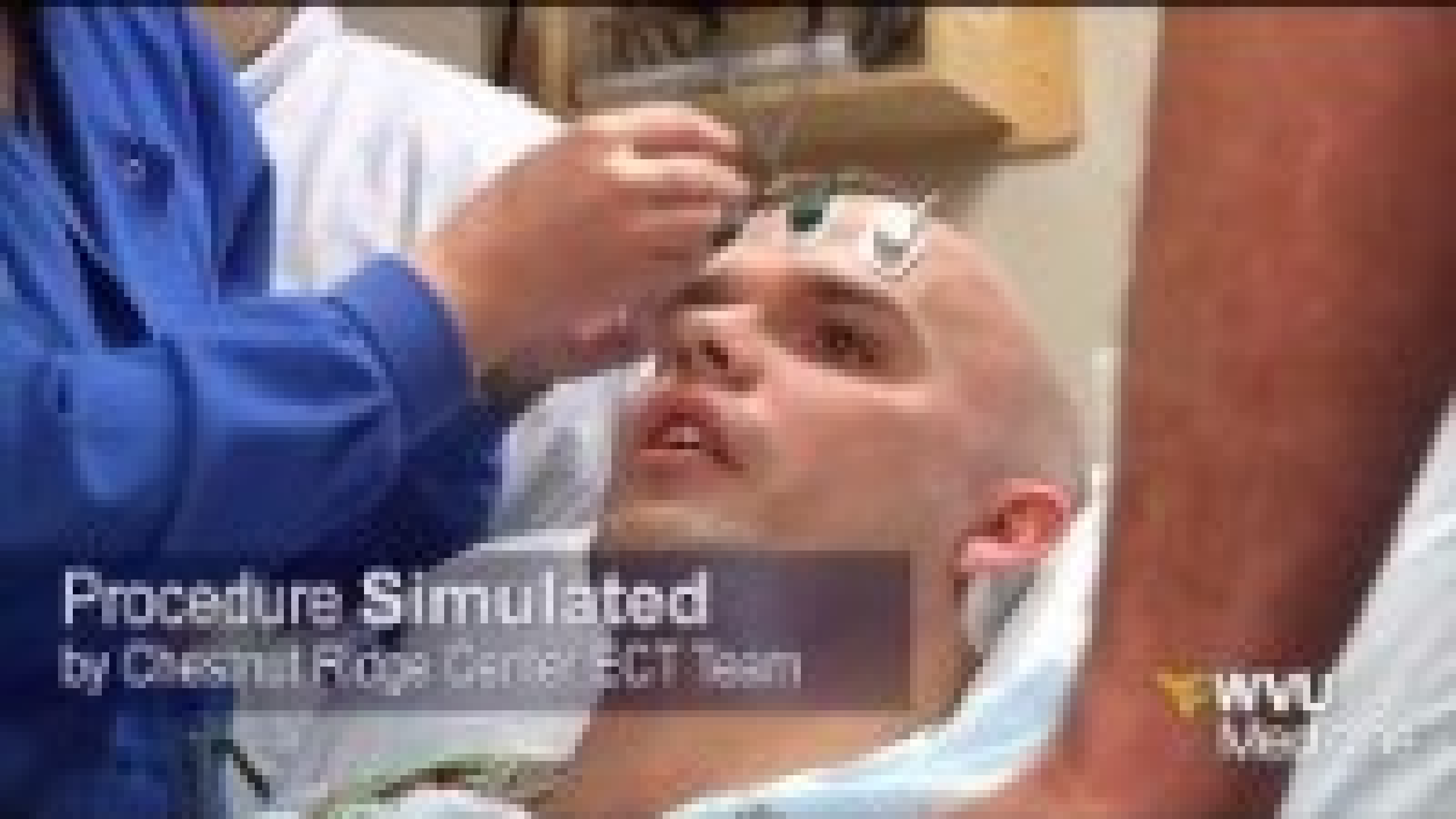
ECT Continued

- Safe in pregnancy
- Safe in older adults who cannot tolerate drug side effects
- Utilized by patients who prefer ECT to medicines
- Utilized when ECT has been successful in the past

Relative Contra-Indications for ECT

- Recent MI or stroke (w/I 30 days)
- Increased intracranial pressure
- Aneurysms, active CNS bleeding
- Retinal detachment
- Unstable dentition
- Pheochromocytoma (absolute contra-indication until resolved)


Stimulating electrodes
ECT device
Recording ECG
Recording EEG
Recording
Ground
Intravenous line (sedative, muscle relaxant)
Blood pressure cuff monitor
To oximeter (blood-oxygen tension)
Blood pressure cuff for recording EMG
EMG
EEG, electroencephalogram (brain activity)
ECG, electrocardiogram (heart rate)
EMG, electromyelogram (muscle activity)


Procedure Simulated
by Colesmil Ridge Center ECT Team

ECT

- Still the gold standard
- Primarily reserved for refractory cases
- Underutilized


Spravato
nasal spray
28 mg

Ketamine/Spravato

- Utilized for treatment-refractory major depression
- Possible applications for PTSD, anxiety and substance concerns but this is off-label and there is NO FORMAL INDICATION FOR THIS
- Ideally administered with observation in a physician's office (and a word on this…if depression is the thing being addressed, probably best that a psychiatrist is monitoring the treatment)..i mean, I can go out and do knee surgeries, but should I?
- Side effects: elevated blood pressure, dissociation, nausea
- It is widely held that there is no respiratory arrest risk at the doses used for depression; nonetheless the physician's office must be prepared to navigate any medical eventuality, including respiratory arrest

Contra-indications for Spravato/Ketamine

- Aneurysms
- Arteriovenous malformations
- History of cerebral hemorrhage
- Some heart diseases
- Increased intracranial pressure
- Pregnancy
- History of psychosis

Spravato/ketamine Administration

- Spravato is administered under a REMS protocol
    - Blood pressure is closely monitored
    - Patients are not allowed to drive after treatment
    - Storage and administration requirements as Spravato is controlled
    - Strongest evidence is for intranasal and IV ketamine. Insufficient evidence for oral,subcutaneous, or intramuscular ketamine for treatment resstent depression

APA guidelines on Ketamine Use for Depression

- Patient selection-for appropriateness and to exclude contra-indications
- Physical exam and monitoring vital signs during and immediately after treatment
- Clinic equipped with appropriate cardiorespiratory monitoring
- Patient has reliable transportation to/from treatments

APA Guidelines Continued

Ketamine is administered only in settings with multidisciplinary personnel, including professionals with expertise in assessing mood disorders and suicidal ideation

The APA does NOT support take-home ketamine treatment

The APA believes Ketamine should be managed solely by professionals who are equipped to navigate psychiatric emergencies

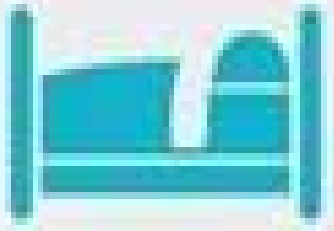
Special Consideration—Seasonal Affective Disorder

- Typical presentation is fall/winter
- Phototherapy is a powerful modality—10,000 lux broad spectrum light used about 1 ½ feet away in the morning time (using too late in the day will risk insomnia)—a tanning bed WILL NOT WORK as the eyes must perceive the light. NO UV in a SAD phototherapy light.
- Buproprion is also used for this
- Vitamin D needs to be checked to ensure good space

Postpartum Depression

COMMON SYMPTOMS

Changes in sleep patterns



Anger/Rage

Weepiness or sadness

Difficulty concentrating

Change in appetite

Anxiety

Postpartum Disorder

- May present during pregnancy or after delivery
- Most often treated with SSRIs
- Of special note, Zoloft specifically has been studied and safe in breastfeeding
- Postpartum esp new onset: screen carefully for bipolar disorder. In the literature there is an association of post-partum depression and bipolar disorder.

Zulresso for Post-Partum Depression

- IV treatment, 60 hours, for refractory post-partum depression
- Works through GABA(a) receptors
- Prescribed under a REMS authority due to risk of excessive sedation or sudden loss of consciousness
- Continuous pulse oximetry monitoring, cannot care for children unsupervised

Post-Partum Depression is the Most Common Complication of Pregnancy

Table 2. Distinguishing Between "Baby Blues" and Postpartum Major Depression

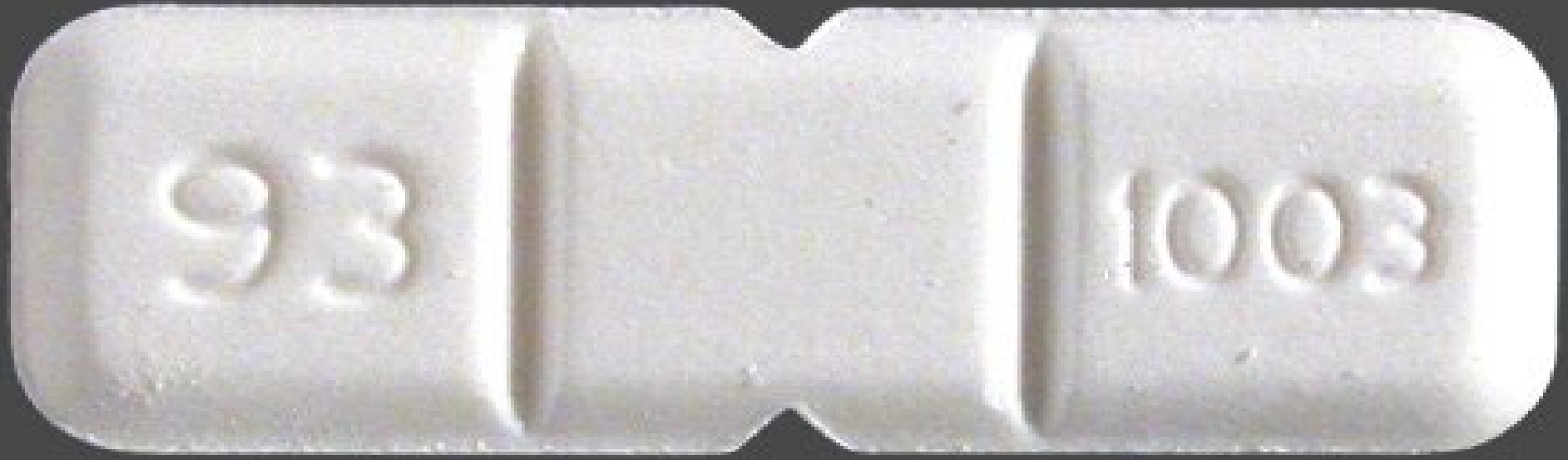
Characteristic	*Baby blues*	*Postpartum major depression*
Duration	Less than 10 days	More than two weeks
Onset	Within two to three days postpartum	Often within first month; may be up to one year
Prevalence	80 percent	5 to 7 percent
Severity	Mild dysfunction	Moderate to severe dysfunction
Suicidal ideation	Not present	May be present

Anxiety disorders

- Generalized Anxiety Disorder, Panic Disorder, Social Anxiety Disorder, Phobias
- First line medicine: anti-depressant therapy, typically SSRI/SNRI
- Buspirone is also indicated for generalized anxiety disorder
- Benzodiazipines were used in the past but are falling out of favor due to concerns about long-term usage and cognitive side effects
- Other agents used: gabapentin, Vistaril, low dose beta blockers, magnesium, Remeron

Special advice on HOW to use Buspirone

- Buspirone (Buspar) is an easily dismissed, harder-than-average medicine to use. It gets a bad rap primarily because it is often not used efficaciously
- Buspar is a very short ½ life medicine. It must be dosed frequently to work…think 3-4 times a day.
- I initiate buspirone at 15 mg tabs, 1/3 three times a day for a week, then 2/3 three times a day for a week, then 1 three times a day
- Set the expectations: buspirone does not work like Xanax…it takes awhile for it to build up and create an effect
- Buspar absorbs better when it is dosed with food…several times higher effect
- The package insert dose range for buspar is up to (?45 or 60) mg a day, but it has safety data much higher than this; nausea and dizziness are the limiting factors
- The metabolization of buspar is impacted adversely by grapefruit and other potent CYP3A4 inhibitors; avoid grapefruit. Buspirone can potentiate some benzodiazipines, like xanax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PTSD

Antidepressant therapy is first line for PTSD

However, compelling data for prazosin, doxazosin, lamotrigine for PTSD

These are not FDA-indicated, but prazosin in fact has a larger effect size for PTSD than the antidepressants

There is not a place for long-term benzodiazepine usage in PTSD. There is an especially high risk of addition with benzodiazepines and PTSD

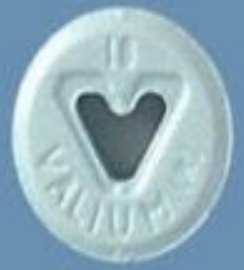
Many of the most commonly prescribed benzos are those which are most readily abused, including:

ALPRAZOLAM
(Xanax)

CLONAZEPAM
(Klonopin)

CHLORDIAZEPOXIDE
(Librium)

DIAZEPAM
(Valium)



LORAZEPAM
(Ativan)

TEMAZEPAM
(Restoril)

TRIAZOLAM
(Halcion)

Special comment on benzos

Long term benzodiazepine usage is associated with cognitive dulling

Long ½ life benzos may be more implicated than short ½ life benzos, but the long shot is not positive for the class in general

Tapering may be prolonged

Benzos continued

WHAT DOES THIS MEAN FOR PATIENT CARE?

- Don’t start patients on benzos—especially long-term benzos. The data no longer supports this
- When appropriate (which is almost always), attempt to taper patients off benzos

Long-term usage of benzos

- Defined as greater than 3 mo use
- Tolerance can develop more quickly than this
- Controversial: changes in MRIs that may be temporary or permanent
- Standardized tapers but some patients benefit from “Ashton protocol”
- Benzos reserved for intermittent, urgent or truly refractory

Replacement Options Include

- gapapentin
- maximized antidepressants
- beta-blockers
- buspirone

Patients Who Will Require Prolonged Tapers

- Elderly
- Female
- Daily use especially over a month and especially over 3 months
- Highly anxious
- Somatic

Bipolar Disorder

- Antiseizure Agents
- Antipsychotics
- Lithium
- ECT

Lamotrigine

- FDA indicated in Bipolar I, to delay time to occurrence of mood disorders in patients treated for acute episodes with standard therapy
- Often used off label for bipolar II as well
- Is not indicated for bringing patients to remission, but rather, for keeping patients in remission
- Side effects: nausea, discontinuation seizure risk, B vitamin deficiencies, Steven-Johnson Syndrome/toxic epidermal necrolysis

Steven-Johnson Syndrome

- Flu-like symptoms followed by
- Painful rash that spreads and blisters
- Rash involves skin and mucous membranes
- Typical onset is at beginning of treatment or at dose titration
- Treated by stopping offending agent and possible systemic treatment up to and including intensive care treatment; can be fatal

Valproic Acid/Depakote

- FDA indicated for manic episodes associated with bipolar disorder
- FDA indicated for mixed episodes associated with bipolar disorder (ER version only)
- Risks: pancreatitis, liver impairment, teratogenesis
- Many psychiatrists will not use this with reproductive aged women, even if birth control

Carbamazepine

Carbamazepine (Tegretol XR, Tegretol, Epitol, Carbitrol, Equitro)

Used for bipolar mania

Must be titrated

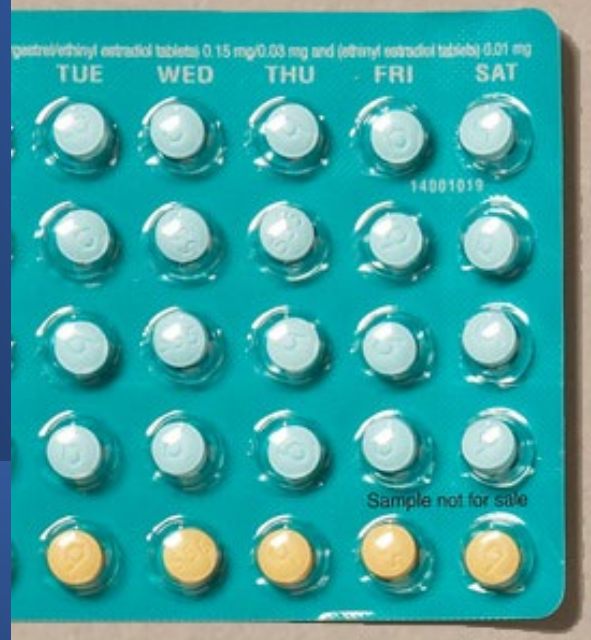
Side effect profile

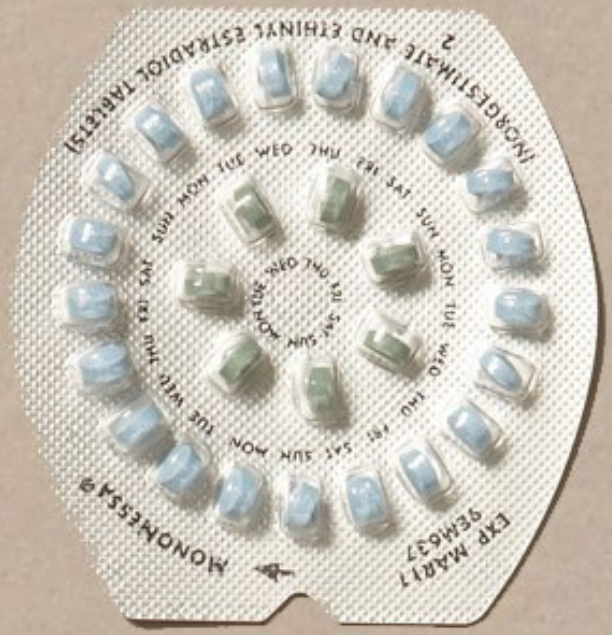
- Rash including Steven-Johnson rash
- Aplastic Anemia
- Agranulocytosis
- Sodium depletion
- Dizziness, loss of coordination, nausea, vomiting, drowsiness

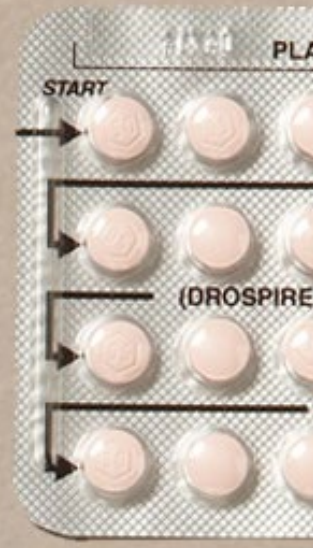
Carbemazepine/ oxcarbazepine

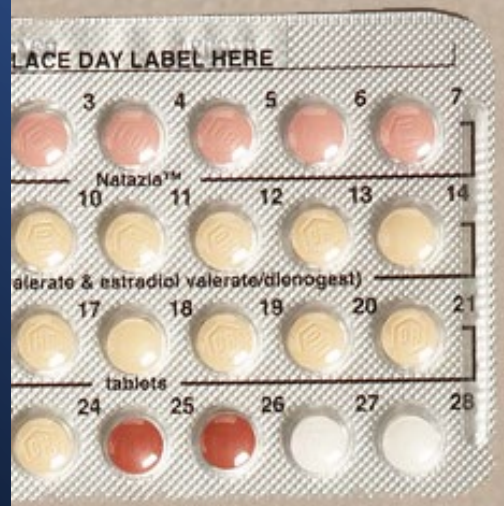
- Trileptal, Oxtellar XR
- Not FDA indicated for any psychiatry usage
- May help with bipolar mania, impulse control disorder
- Same risk profile as carbamazepine formulations

Both Carbemazepine and Oxcarbazepine reduce the efficacy of oral hormone contraception









Atypical Antipsychotics

- Risperone (Risperdal)
- Olanzepine (Zyprexa)
- Quetiapine (Seroquel, Seroquel XR)
- Aripiprazole (Abilify)
- Ziprasidone (Geodon)
- Clozapine (Clozaril)—only available via REMS
- Paliperidone (Invega)

Atypicals Continued

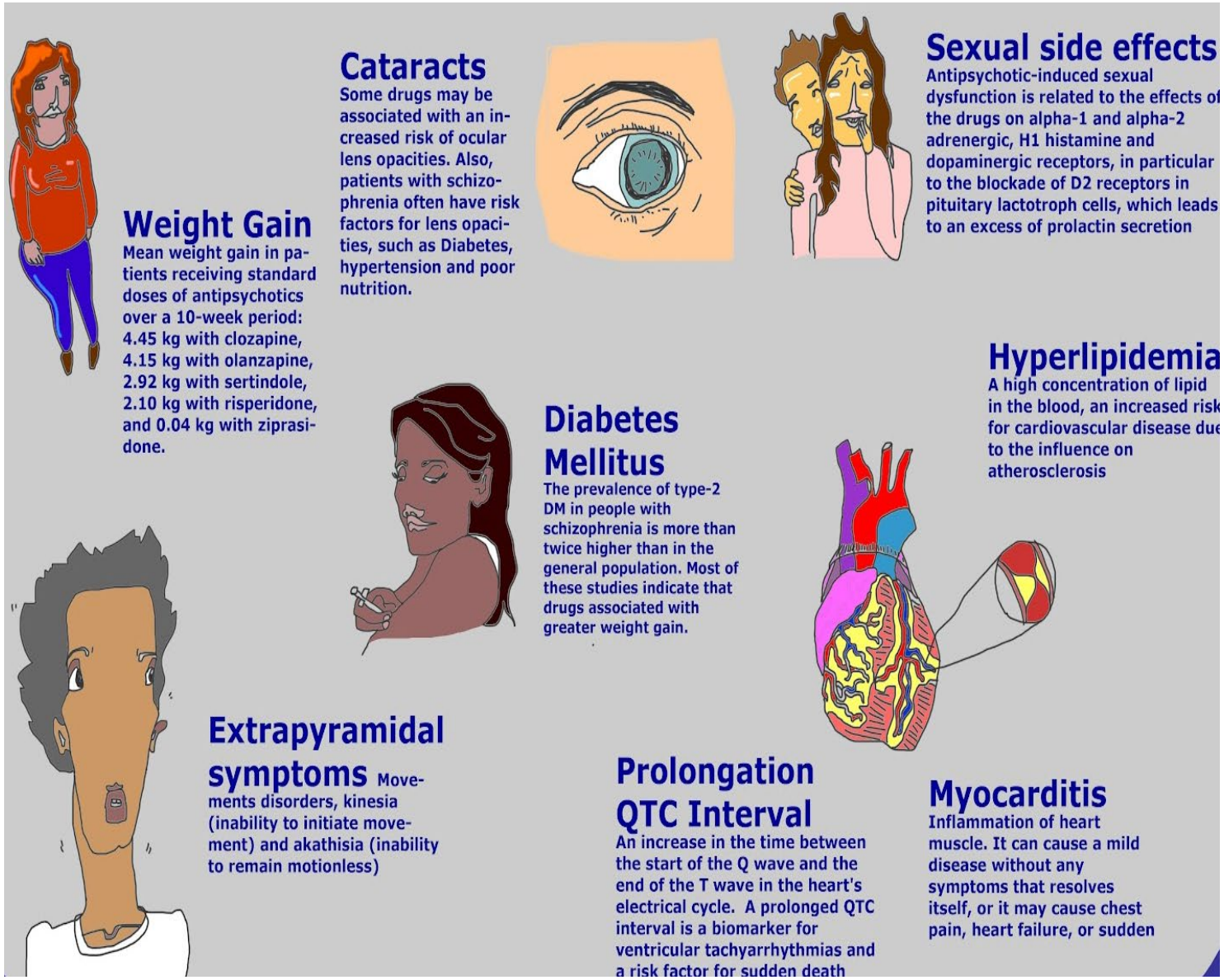
- Cariprazine (Vraylar)
- Lurasidone (Latuda)
- Asenapine (Saphris)
- Brexpiprazole (Rexulti)
- Lumateperone (Caplyta)

Risperdal	Schizophrenia 13+; short-term acute manic or mixed bipolar I 10+
Zyprexa	Acute/maintenance schizophrenia, acute manic/mixed bipolar I and maintenance in adults; acute bipolar I depression in adults (with Prozac), treatment-resistant depression (with Prozac)
Seroquel	Schizophrenia 13+; bipolar mania 10+; bipolar depression adults
Abilify	Schizophrenia 13+; acute mania/mixed bipolar I 10+; adjunct depression adults; agitation-schizophrenia, bipolar mania
Invega	Acute/maintenance schizophrenia; acute schizoaffective
Geodon	Bipolar maintenance;
Clozaril	Treatment-resistant schizophrenia; reducing SI in patients with schizophrenia or schizoaffective
Latuda	Schizophrenia; Bipolar I depression;
Vraylar	Schizophrenia; acute manic/mixed bipolar
Rexulti	Schizophrenia; adjunct for major depression in adults
Saphris	Schizophrenia in adults; acute manic/mixed bipolar I 10+; bipolar I maintenance in adults
Caplyta	Schizophrenia in adults

Atypical antipsychotics, continued

- They work on dopamine, serotonin
- Varying impact on histamine, acytylcholine
- It is important to check blood sugar, weight and cholesterol periodically
- One of the downfalls of telemedicine: harder to get accurate weights and timely labs for patients

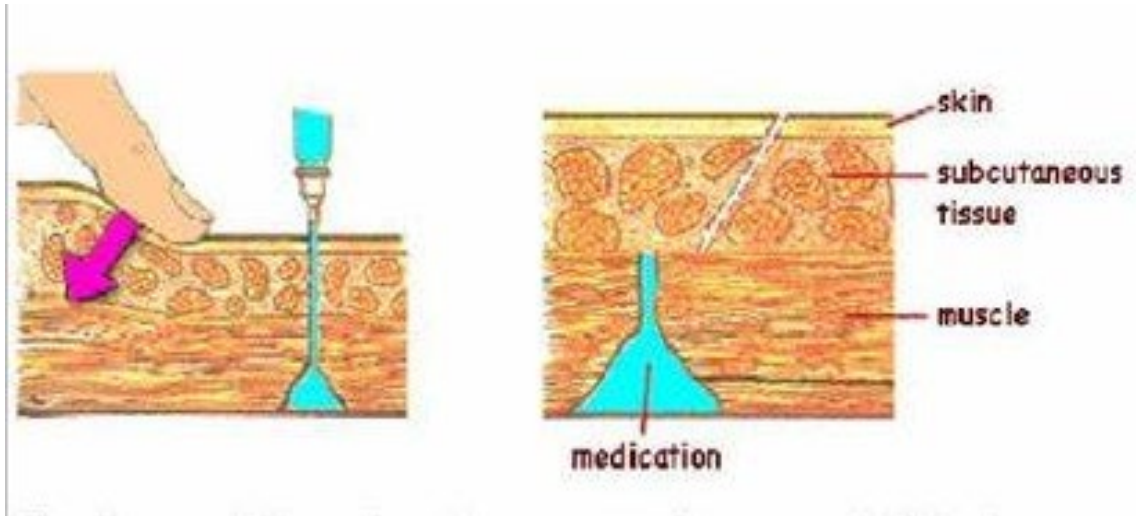
Side Effect Profile



Depos

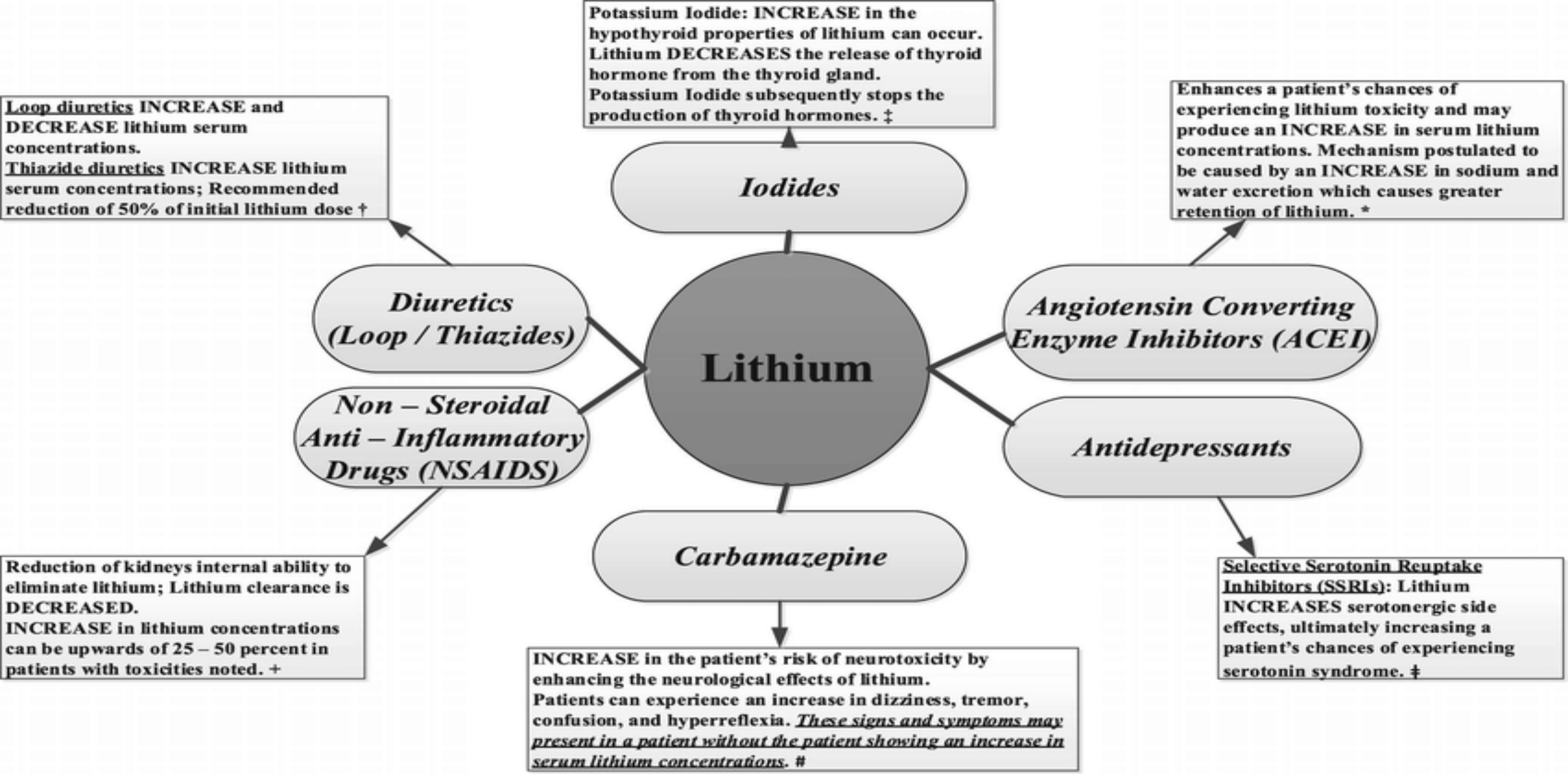
- Once every few weeks to once every 3 mo shots
- Improve compliance
- Allows the prescriber to monitor compliance
- Smoother modality with fewer peaks/troughs
- Insurance coverage can be a barrier
- Test oral dose for tolerability
- May need to continue oral dose until depot kicks in


For deltoid or
gluteal intramuscular
injection only
400 mg PER PRE-FILLED
DUAL CHAMBER SYRINGE
Rx Only
Each injection must be administered by a healthcare professional only.
Attention: Dispense an enclosed Medication Guide to each patient.
400 mg
1
inch
Needle for
NON-OBESE, DELTOID
1.5
inch
Needle for
NON-OBESE, GLUTEUS
or
OBESE, DELTOID
2
inch
Needle for
OBESE, GLUTEUS


skin
subcutaneous
tissue
muscle
medication

Lithium

- Gold standard for bipolar disorder
- Challenging medicine to use, with a narrow therapeutic index
- Levels must be done periodically
- Hard on kidneys, thyroid, parathyroid, rarely on sodium, blood cell production
- Lab will often reflect and elevated wbc which is NOT indictive of infection



†#‡Lithium. Dynamed Web site. Last updated 2013 July 24. Available at: http://web.a.ebscohost.com.libproxy.presby.edu/dynamed/. Accessed July 9, 2015.
‡Lithium and Potassium Iodide. Drug Interaction Report. Available at : http://online.lexi.com.libproxy.presby.edu/lco/action/interact . Accessed July 9, 2015.
*Douste-Blazy PH, Rostin M, Livarek B, et al. Angiotensin-Converting Enzyme Inhibitors and Lithium Treatment. *Lancet*, 1986, i:1448.
+Phelan KM, Mosholder AD, and Lu S. Lithium Interaction With the Cyclooxygenase 2 Inhibitors Rofecoxib and Celecoxib and Other Nonsteroidal Anti-Inflammatory Drugs. *J Clin Psychiatry*, 2003, 64(11):1328-34

Target Lithium Levels

Acute Mania: 0.8-1.2 mEq/L

Maintenance: 0.6-1.0 mEq/L

Recommended Labs & Monitoring

- **Baseline: CBC, CMP, Cr, BUN, TSH**

+1 week*: Li level, TSH, BUN/Cr, Electrolytes
+1-2 months*: Li level, TSH, BUN/Cr, Electrolytes
+6-12 months*: Li level, TSH, BUN/Cr, Electrolytes

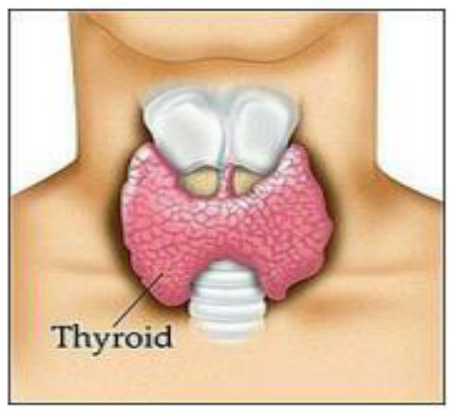
- **Every 6-12 months:** Li level, TSH, BUN/Cr, Electrolytes

- **Consider baseline EKG in pts >50yo**
- **Monitor weight**
- **Check Li levels after 4-5 half lives (blood should be collected prior to next dose)**
- **Recheck Li levels after dose changes, addition of other drugs, or if suspecting toxicity**

After initiating Lithium

Lithium Side Effects

- Acute effects
  - Nausea, Diarrhea
  - Lethargy
  - Impaired Cognitive Functioning
  - Hand Tremor
- Long Term Side Effects
  - Hypothyroidism
  - C*ar*diac Effects
  - Weight Gain
  - Leukocytosis
  - Dermatological Effects
    - Acne, Psoriasis



Medical Place Pharmacy

Schizophrenia/Schizoaffective

Definitions are important: schizoaffective is a psychotic disorder, and a mood disorder, where the two do not necessarily coincide in timing, and tends to have a less severe course than schizophrenia

Both disorders are treated with antipsychotics. Schizoaffective also requires the mood component to be treated. Schizophrenia may have co-occurring mood disorder that also merits treatment. The treatment for psychosis and mood can be with one med that covers both (ie the atypical antipsychotics)

Medicines to treat psychosis

Typical antipsychotics

- Pill and depot versions available
- High risk of extrapyramidal side effects
- Rarely used and reserved for emergencies or highly refractory cases

Atypical antipsychotics

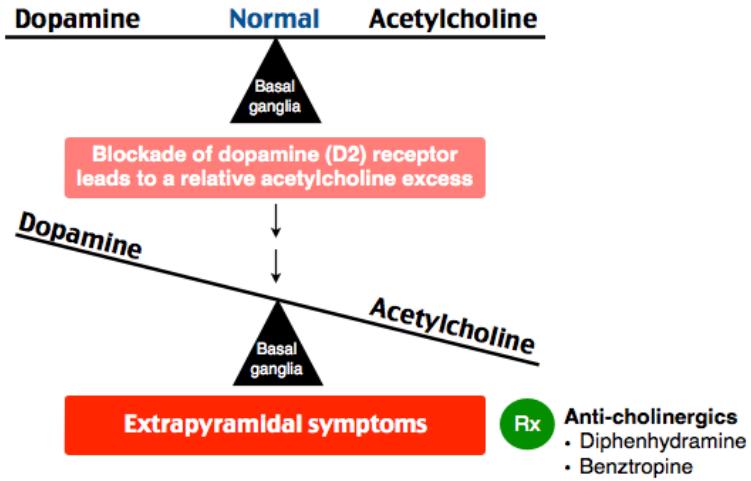
- Pill and depot versions available
- Lower but still present risk of extrapyramidal side effects
- High risk of weight gain, cholesterol elevation, hyperglycemia, and possible association with strokes in the elderly
- Should NOT be used in the elderly unless the benefits clearly outweigh the risks, especially for “behavior control”

Risperdal	Schizophrenia 13+; short-term acute manic or mixed bipolar I 10+
Zyprexa	Acute/maintenance schizophrenia, acute manic/mixed bipolar I and maintenance in adults; acute bipolar I depression in adults (with Prozac), treatment-resistant depression (with Prozac)
Seroquel	Schizophrenia 13+; bipolar mania 10+; bipolar depression adults
Abilify	Schizophrenia 13+; acute mania/mixed bipolar I 10+; adjunct depression adults; agitation-schizophrenia, bipolar mania
Invega	Acute/maintenance schizophrenia; acute schizoaffective
Geodon	Bipolar maintenance;
Clozaril	Treatment-resistant schizophrenia; reducing SI in patients with schizophrenia or schizoaffective
Latuda	Schizophrenia; Bipolar I depression;
Vraylar	Schizophrenia; acute manic/mixed bipolar
Rexulti	Schizophrenia; adjunct for major depression in adults
Saphris	Schizophrenia in adults; acute manic/mixed bipolar I 10+; bipolar I maintenance in adults
Caplyta	Schizophrenia in adults

Typical Antipsychotics (First Generation)

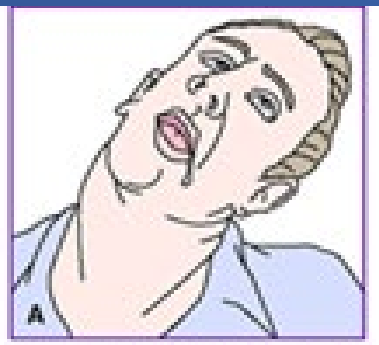
- Chlorpromazine
- Fluphenazine
- Haloperidol
- Loxapine
- Pimozide
- Perphenazine
- Prochlorperazine
- Thioridazine
- Thiothixine
- Trifluoperazine

Extrapyramidal symptoms



Rx **Anti-cholinergics**
- Diphenhydramine
- Benztropine

Reaction	Onset	Features
Acute dystonia	Hours to days	• Spasm of tongue, neck, face and back
Parkinsonism	5 to 30 days	• Tremor • Shuffling gait • Drooling • Stooped posture • Instability
Akathisia	5 to 60 days	• Compulsive, repetitive motions • Agitation
Tardive dyskinesia	Months to years	• Lip smacking • Worm-like tongue movements • "Fly-catching"



A. Dystonia—spasms of the tongue, neck, back, and legs. Spasms may cause unnatural positioning of the neck, abnormal eye movements, excessive salivation.

B. Akathisia—continuous restlessness, inability to sit still. Constant moving, foot tapping, hand movements may be seen.

C. Pseudoparkinsonism—muscle tremors, cogwheel rigidity, drooling, shuffling gait, slow movements.

D. Tardive dyskinesia—abnormal muscle movements such as lip smacking, tongue darting, chewing movements, slow and aimless arm and leg movements.


501
502
503

Sleep disorders

Divided into sleep onset, sleep maintenance, and combined

Emphasis on sleep hygiene is paramount

Sleep Disorders continued

Cognitive platforms like CBT-Icoach or Calm are helpful for both sleep onset and sleep maintenance

Rule out medical disorders like restless leg syndrome or sleep apnea

Sleep diary

Pharmacology for sleep disorder-Sleep Onset

- Melatonin—specific instructions on use
- Sonata, Ambien, Ambien CR, Lunesta
- Belsomra, Dayvigo
- Rozerem

Pharmacology for sleep disorder-Sleep Maintenance

- Silenor (3-6 mg doxepin, NOT higher)
- Belsomra, Dayvigo
- Ambien CR, Lunesta

Combined Sleep Difficulties

Belsomra, Dayvigo

Trazodone

Z-drugs: Ambien CR,Lunesta

Benedryl

Not a great long-term option

Robustly anti-cholinergic

Medicine and the Elderly and Vulnerable

- These patients are more vulnerable to medicine side effects, due to:

- Decreased clearance

- Increased number of meds/interactions

- Decreased physical and cognitive resilience

BEERS

What are the Beers Criteria?

The Beers Criteria (or the 'Beers Criteria for Potentially Inappropriate Medication Use in Older Adults) are, as it's longer description suggests, guidelines for healthcare professionals – guidelines that improve the risk-benefit ratio of medicine use in older adults.

The Beers Criteria...

- ✓ Serve as guidelines
- ✓ Are not a substitute for professional judgement
- ✓ And are used alongside other prescribing criteria

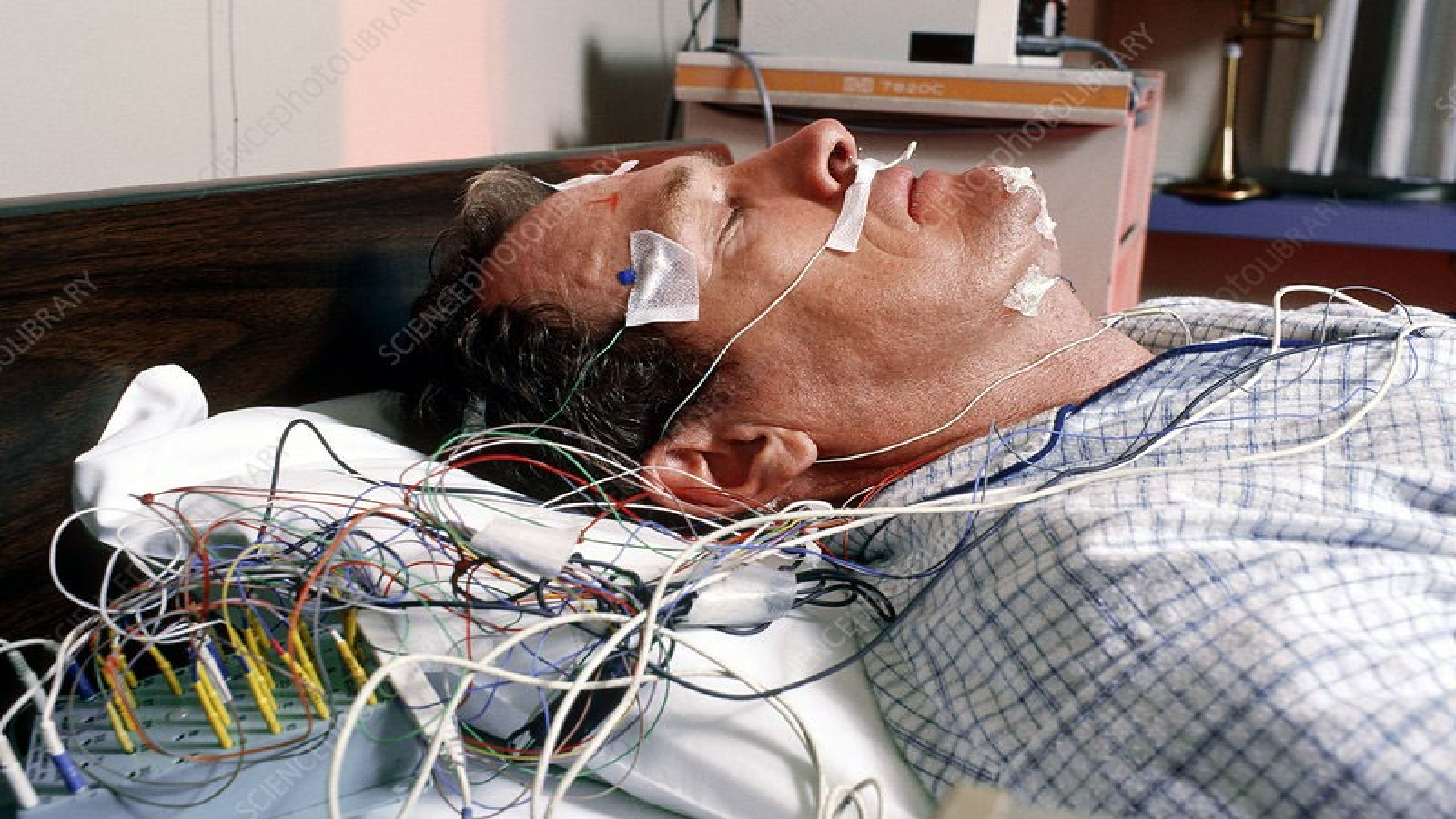
AGS BEERS CRITERIA 2015

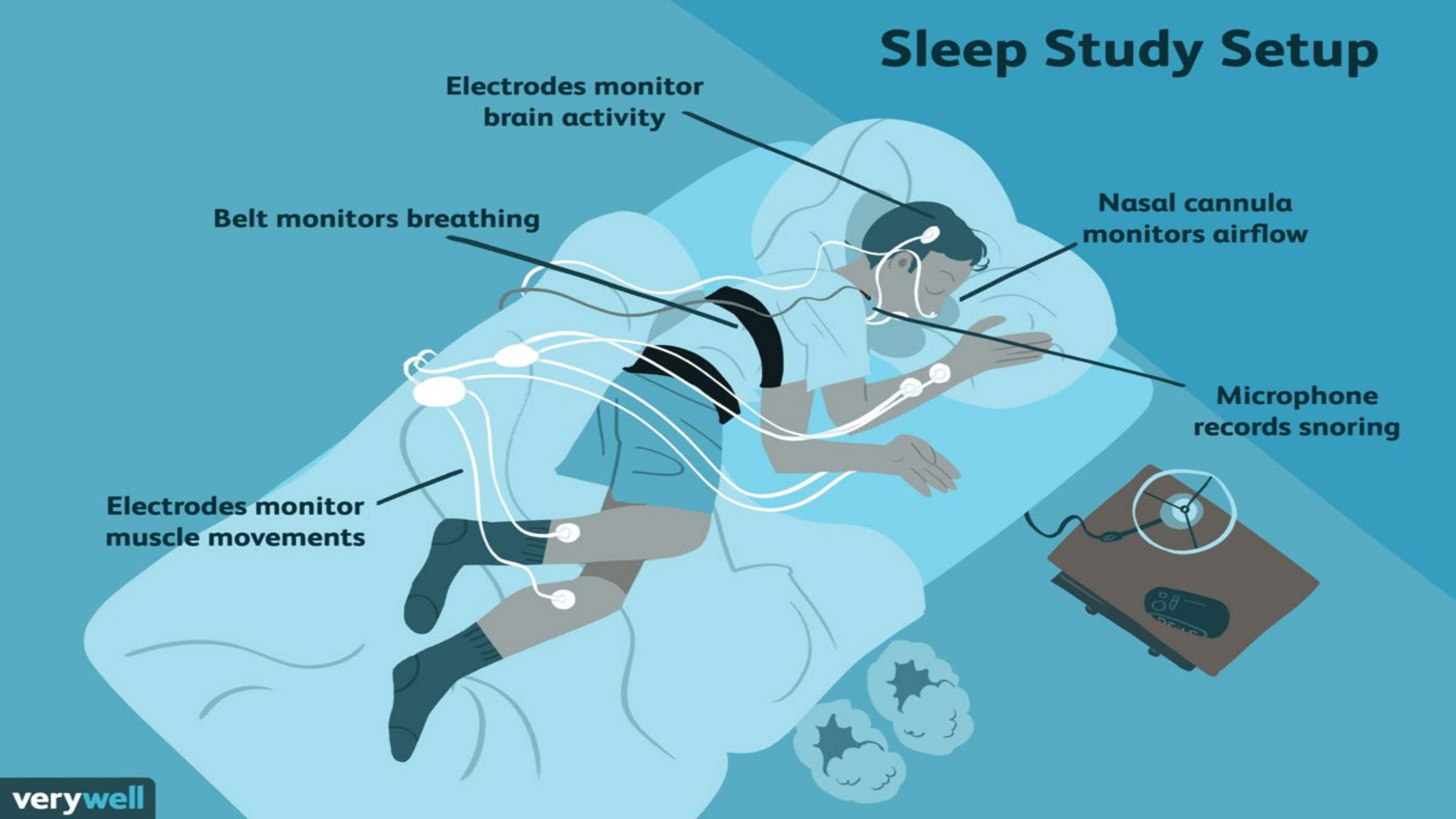
The Beers Criteria was first created in 1991 by the geriatrician, **Mark H. Beers**.

The list is categorised according to the *risk of negative outcomes*.

Example: Diphenhydramine, a H_1 receptor antagonist, may increase sedation and increase the risk of confusion and/or falls.

pharmafactz.com @PharmaFactz




Sleep Study Setup
Electrodes monitor brain activity
Belt monitors breathing
Nasal cannula monitors airflow
Microphone records snoring
Electrodes monitor muscle movements
verywell


FX

Wake-Promoting Agents for Sleep Apnea, Narcolepsy

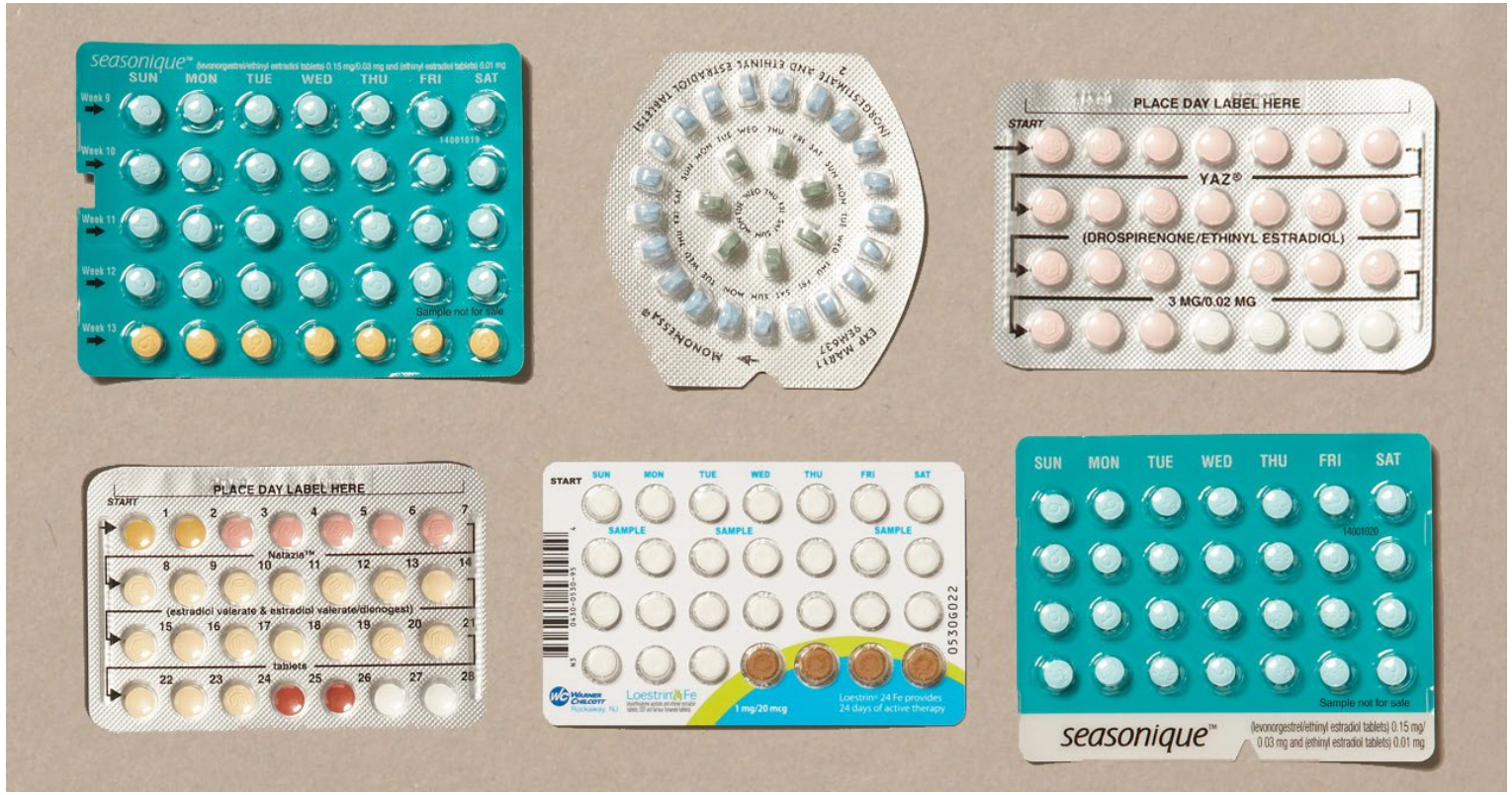
Modafanil (Provigil), Armodafanil (Nuvigil), and Solriamfetol (Sunosi)

Improve utilization of dopamine in the brain; promote wakefulness when compliant sleep apnea treatment is inadequate

Promote increased daytime wakefulness in narcolepsy

Provigil and Nuvigil invalidate oral contraception

Provigil and Nuvigil don’t work with these!



Difficulties associated with ADHD in adults

- Difficulties with maintaining attention
- Difficulties with completing tasks
- Unable to prioritize or manage thoughts and actions
- Forgetting important things
- Difficulties with day-to-day responsibilities
- Inconsistent performance at work or in their careers
- Feelings of frustration, guilt or blame
- Relationship problems

Attention Deficit Disorder

Three types: inattentive, hyperactive, impulsive

Onset in childhood

Onset of primarily inattentive attention deficit disorder in adulthood-work up for alternate or comorbid

Differential for ADD

- Anxiety disorders
- Sleep disorders
- Mood disorders
- Substance Use Disorders
- Learning disorders
- Oppositional Defiant Disorder
- Narcolepsy

Dx ADD/ ADHD continued

- Attention disorders are
- The side effect burden for many of the treatments for attention disorders is high
- Some sort of psychometric screening or evaluation is important to clarify the diagnosis and exclude confounding or co-occurring illnesses
- Formal testing, parent/teacher questionaires, performance-based assessments all have a role

Nonstimulant Medicines for Attention Disorders

Norepinephrine agents:
Atomoxetine (Strattera)
Viloxazine (Qelbree)

Alpha adrenergic agents:
Guanfacine ER (Intuniv),
Clonidine ER (Kapvay)

Off-label Medicines Used to Treat Attention Disorders

Wake-promoting agents: Modafanil, Armodafanil, Solriamfetol

- efficacy in ped population specifically
- risk of rash in studies
- invalidate some hormone contraception

Buproprion, SNRI's, Tricyclic antidepressants, MAOs

- Not especially powerful
- Same side effects and risk/benefits as when used for depression

Methylphenidates: Intermediate Duration

- Ritalin LA
- Ritalin SR
- Metadate CD
- Cotempla XR-ODT
- Cotempla CR

Methylphenidates: Extended Duration

- Aptensio XR
- Concerta
- Daytrana (patch)
- Adhansia XR
- Jornay PM
- Metadate CD
- Quillivant XR
- Quillichew ER

Dexmethylphenidates

Focalin—about 4-6 hours duration

Focalin XR—about 8 hours duration

Azstarys – a dexmethylphenidate prodrug, serdexmethylphenidate, combined with an immediate release dexmethylphenidate—about 12 hours duration

Amphetamines: Intermediate Duration

- Adderall XR (mixed amphetamines)
- Adzenys ER/XR-ODT (pure amphetamine)
- Dyanavvel XR(mixed amphetamines, liquid)

Amphetamines: Extended Duration

- Mydayis

Dexamphetamines

- Dexedrine—4-6 hours
- Dexedrine SR--6-8 hours
- Zenzedi—4-6 hours
- Vyvanse—is actually a prodrug, lisdexamphetamine,very long acting

Stimulants: risks

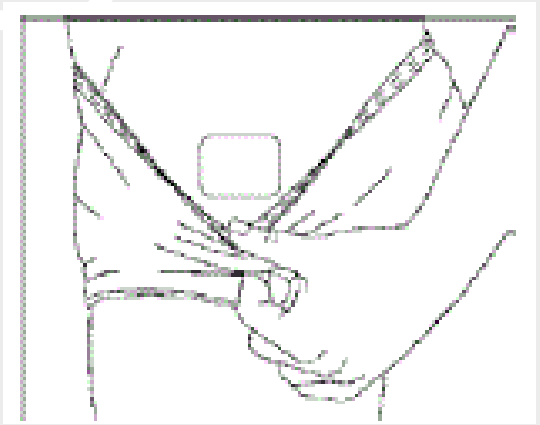
These are highly controlled medicines. Addiction risk is high. That being said, ASAM states treating attention deficit disorders, even with stimulant medicines, likely reduces the risk of substance abuse. However, if the patient has a history of recent substance struggle, treatment with an efficacious, non-controlled medicine is prefere

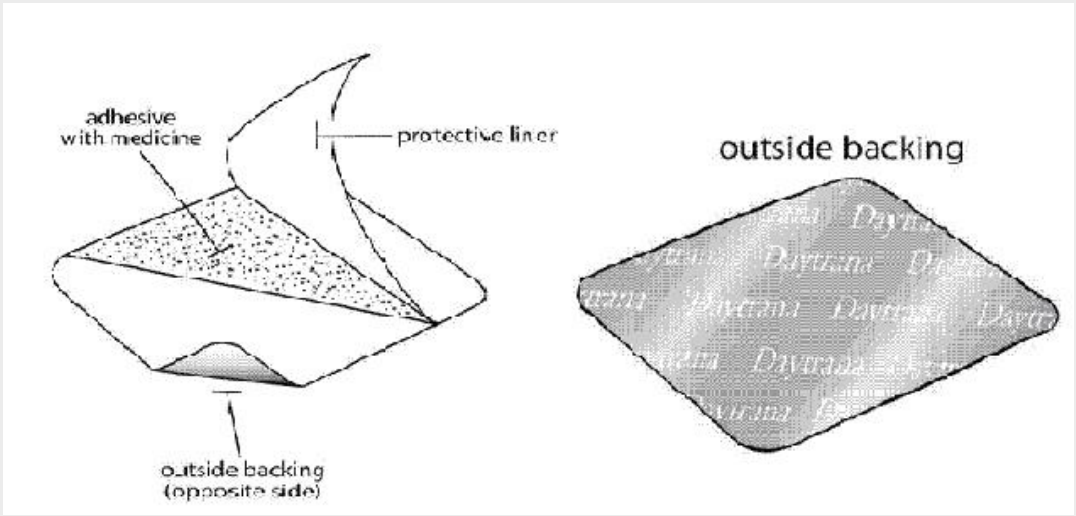
Controlled substance contract with the patient. In our clinic…cannot replace if lost stolen or destroyed. If filled in another clinic or by another provider, we will no longer fill controlled medicines

PMP interrogation to ensure medicines filled properly

Blood pressure and pulse elevation, cardiovascular risks like stroke, heart attack.

Other side effects: insomnia, headache, appetite decrease, anxiety, agitation, psychosis, manid induction




adhesive
with medicine
protective liner
outside backing
outside backing
(opposite side)
outside backing

UDS for stimulant compliance

Performed to ensure patient is taking what they are supposed to be taking

Also to ensure they are not taking things that are not helpful

Methylphenidates will NOT test positive on a point-of-care UDS

ADD and Substance Abuse

- ASAM guidelines: Treat the ADD! Improves outcome of the SUD
- Noncontrolleds when possible
- Controlleds with adequately treated ADD better than inadequately treated
- Monitor, pill counts, UDS, more frequent visits
- Even if the substance abused was a stimulant (this is new, controversial)

Elements of a controlled substance contract

- Acknowledgement of controlled nature of the medicine
- Pledge to take as directed and not share
- Agree to notify prescriber before taking other controlled medicines
- Allow PMP reviews
- Agree to submit to random urine drug screens as a part of treatment
- Allow prescriber to communicate with other providers
- Comply with pill counts when requested
- Acknowledge failure to comply may lead to no controlled medicines being prescribed

Special populations: pregnancy, peds, elderly, medically compromised

Pregnancy

- Treating two patients
- Many medicines cross placenta; fetal clearance is not the same
- Highest risk for birth defects is first trimester medicine use (especially heart, midline deficits)
- Highest risk for perinatal onset difficulties is third trimester medicine use (especially neonatal abstinence syndromes, perinatal sedation)
- Altered medicine metabolism in pregnancy


KEEP OUT OF REACH OF CHILDREN
Do not chew or crush. Swallow whole.

Medicines for the Pediatric Population

- Kids are not “small adults”
- Some medicines can impact development
- Different medicine metabolism rate
- Different volume of distribution (water vs lipid higher in young kids)

Geriatric Considerations

- Slowed medicine metabolism
- Burden of additional illnesses, medicines
- Loss of physical resiliency, cognitive resiliency and neuroplasticity
- Risk of significant side effects

Significant Co-occurring Illnesses

- Risk of interactions with other medicines
- Risk of exacerbating significant medical illness
- Risk of masking underlying illness

WARNING

THE NEXT SECTION HAS DISCUSSION AND IMAGES OF CONTROLLED AND ADDICTIVE SUBSTANCES

Substance d/o

- Alcohol
- Opioids
- Nicotine
- Benzodiazepines
- Stimulants
- Cocaine
- Marijuana

Alcohol

Detoxification

Relapse Prevention

Medical Complications

- Acute
- Prolonged

What Is a Standard Drink?

12 fl oz of regular beer = **8–9 fl oz of malt liquor** (shown in a 12 oz glass) = **5 fl oz of table wine** = **1.5 fl oz shot of distilled spirits** (gin, rum, tequila, vodka, whiskey, etc.)

about 5% alcohol

about 7% alcohol

about 12% alcohol

about 40% alcohol

Each beverage portrayed above represents one standard drink (or one alcoholic drink equivalent), defined in the United States as any beverage containing .6 fl oz or 14 grams of pure alcohol. The percentage of pure alcohol, expressed here as alcohol by volume (alc/vol), varies within and across beverage types. Although the standard drink amounts are helpful for following health guidelines, they may not reflect customary serving sizes.

DETOX-ALCOHOL

Level of detox determined by CIWA score

Benzodiazepines (Librium or Ativan)

Thiamine

CIWA—Clinical Institute Withdrawal Assessment Scale for Alcohol

Clinical Institute Withdrawal Assessment Scale for Alcohol, Revised (CIWA-Ar)

Nausea and Vomiting
0 – No nausea or vomiting
1
2
3
4 – Intermittent nausea with dry heaves
5
6
7 – Constant nausea, frequent dry heaves and vomiting

Paroxysmal Sweats
0 – No sweat visible
1 – Barely perceptible sweating, palms moist
2
3
4 – Beads of sweat obvious on forehead
5
6
7 – Drenching sweats

Agitation
0 – Normal activity
1 – Somewhat more than normal activity
2
3
4 – Moderate fidgety and restless
5
6
7 – Paces back and forth during most of the interview or constantly thrashes about

Visual Disturbances
0 – Not present
1 – Very mild photosensitivity
2 – Mild photosensitivity
3 – Moderate photosensitivity
4 – Moderately severe visual hallucinations
5 – Severe visual hallucinations
6 – Extreme severe visual hallucinations
7 – Continuous visual hallucinations

Tremor
0 – No tremor
1 – Not visible, but can be felt at finger tips
2
3
4 – Moderate when patient's hands extended
5
6
7 – Severe, even with arms not extended

Tactile Disturbances
0 - None
1 – Very mild paraesthesias
2 – Mild paraesthesias
3 – Moderate paraesthesias
4 – Moderately severe hallucinations
5 – Severe hallucinations
6 – Extremely severe hallucinations
7 – Continuous hallucinations

Headache
0 – Not present
1 – Very mild
2 - Mild
3 - Moderate
4 – Moderately severe
5 - Severe
6 – Very severe
7 – Extremely severe

Auditory Disturbances
0 – Not present
1 – Very mild harshness or ability to frighten
2 – Mild harshness or ability to frighten
3 – Moderate harshness or ability to frighten
4 – Moderately severe hallucinations
5 – Severe hallucinations
6 – Extremely severe hallucinations
7 – Continuous hallucinations

Orientation and Clouding of the Sensorium
0 – Oriented and can do serial additions
1 – Cannot do serial additions
2 – Disoriented for date but not more than 2 calendar days
3 - Disoriented for date by more than 2 calendar days
4 – Disoriented for place/person

Cumulative scoring

Cumulative score	Approach
0 – 8	No medication needed
9 – 14	Medication is optional
15 – 20	Definitely needs medication
>20	Increased risk of complications

Relapse Prevention- Alcohol

- Naltrexone/Vivitrol
- Campral
- Topamax
- Antabuse

Opioids

Prescriptions

- Presriptions for chronic pain
- Prescriptions from multiple providers
- Scripts are checked now via PMP

Diverted prescriptions

- Relatives
- Scripts obtained/sold

Illicit Substances

- Heroin

Over the counter legal substances

- Kratom

Bad effects of OPIATES

drowsiness
confusion
memory loss
fatigue
hallucinations
convulsions

dilation of the blood vessels causing increased pressure in the brain

respiratory depression

pupil constriction

slurred speech

nausea
vomiting
weight loss

sexual dysfunction

constipation

effects of using non-sterile needles and adulterants mixed with OPIATES

brain abscesses

skin abscesses

infected and collapsed veins

lung abscesses

endocarditis (heart lining inflammation)

diseases such as hepatitis and HIV

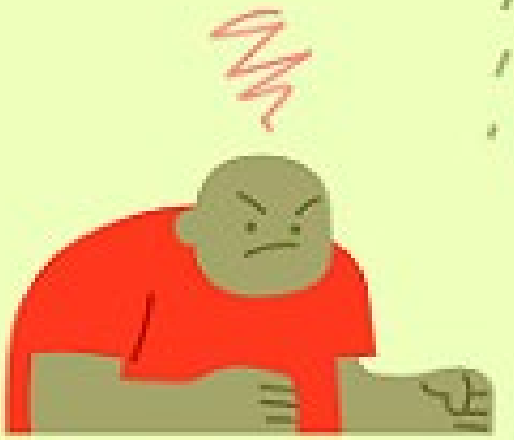
Kratom

Kratom Dosage Chart

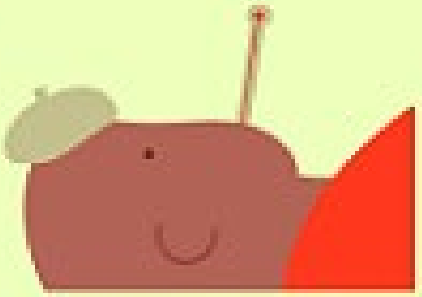
Withdrawal Symptoms Of Kratom

Depression

Anxiety

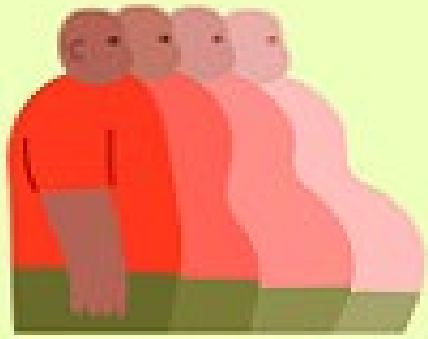


Irritability



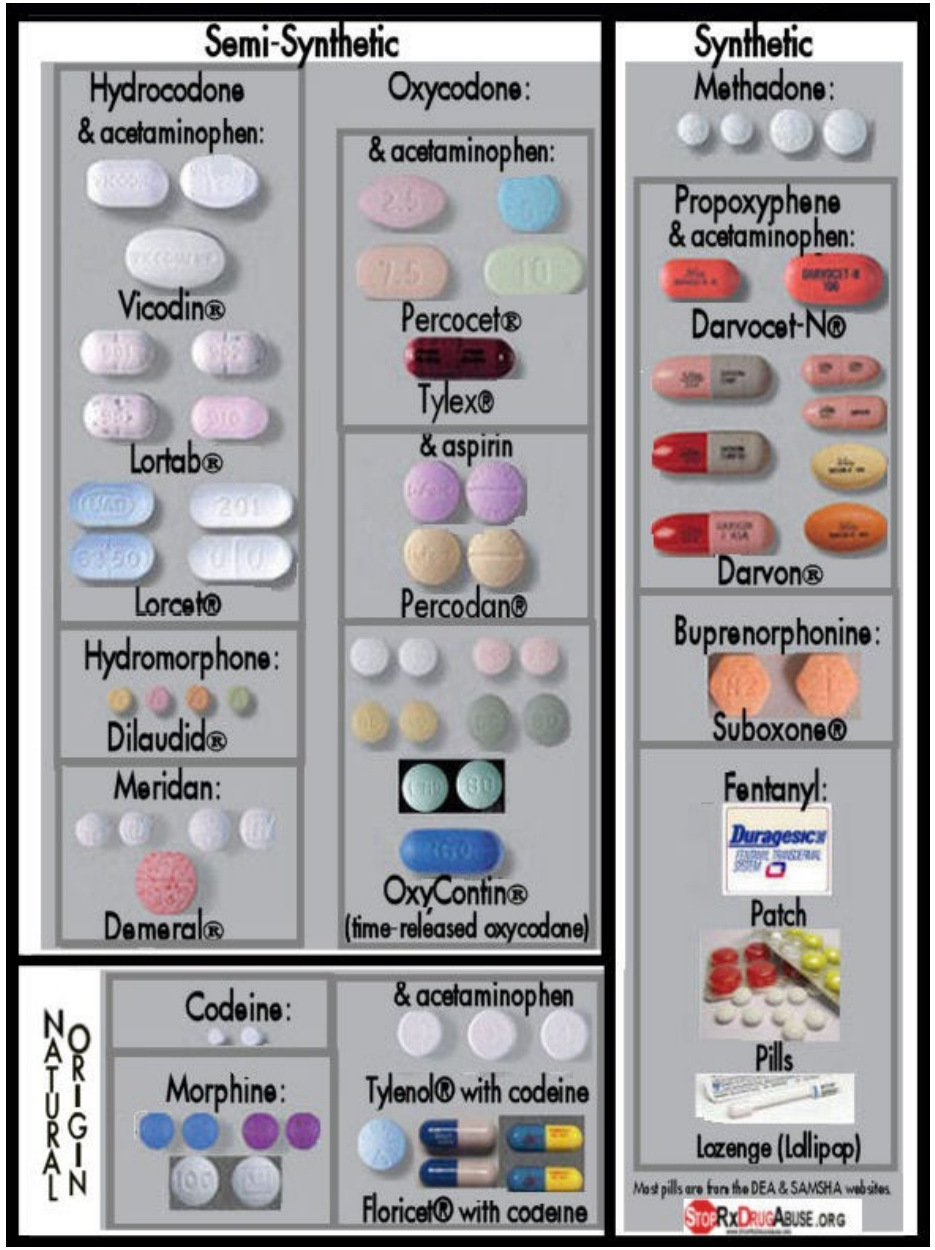
Flu-like symptoms

Insomnia



Weight changes

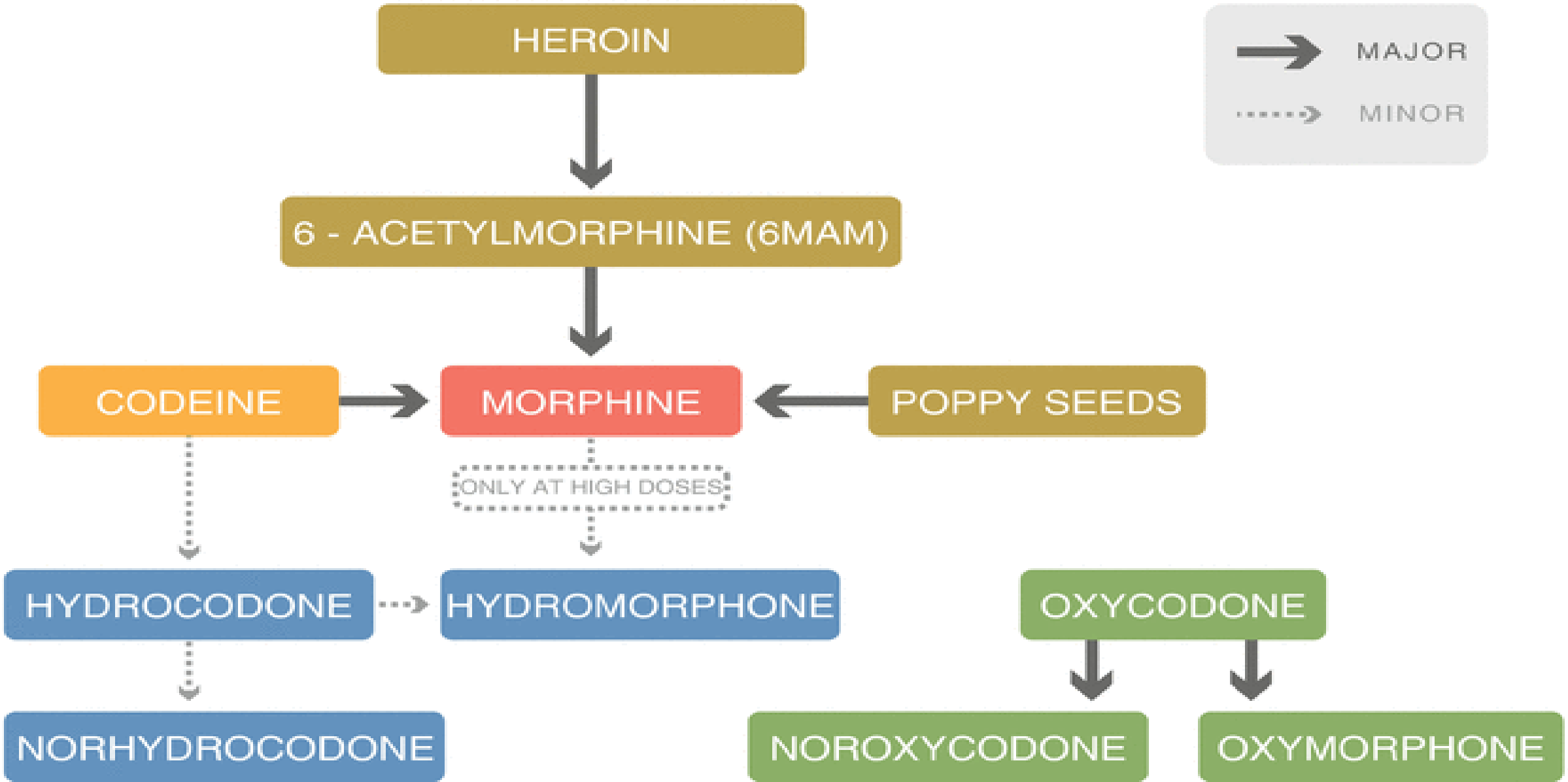
Narcotic and Opiate Prescription Drugs



Testing- Opiates

- Standard point of care UDS will pick up many but not always all opiates
- Must look specifically to find synthetic opiates
- Buprenorphine

OPIOID METABOLITES



UDS:Opiates

Detection time: 1-3 days

False Positives: some antibiotics (fluoroquinolones), Seroquel, rifampicin, tramadol, verapamil

We send all unsupported positives (unless the patient attests the result) and all unexpected and/or unattested negatives for confirmation, for all urine drug screens, for any class

Treatment for Opiate abuse (opiate vs opiod)

Replacement therapy: buprenorphine, methadone

Supportive therapy: clonidine, Vistaril

Receptor blockade: naltrexone, vivitrol

Medication-Assisted Treatment

- Replacement therapy with Buprenorphine
  - Single agent sublingual—buprenorphine, Subutex
  - Single agent subcutaneous—Sublocade
  - Combination agent transmucosal—Suboxone, Zubsolv, buprenorphine-naltrexone

Medication-Assisted Treatment cont.

- Replacement therapy with Methadone
  - Only available in supervised administration clinics
  - Take-home doses ultimately achieved
  - New development of electronic medical dispensing devices may change the landscape

  - Methadone with similar risks to buprenorphine, but higher risks of medicine interactions and overdose

Medicated Assisted Treatment (MAT) for opioid use disorder

Behavioral support

therapy
12-step fellowship
care management
peer supports

+

Medication

buprenorphine
methadone

mortality
overdose
hepatitis C + HIV

survival
birth outcomes
treatment retention

@FOAMpodcast


NDC 12496-1202-3
30 pouches each containing
1 sublingual film
2 mg/0.5 mg
Suboxone®
(buprenorphine and naloxone) sublingual film
2 mg/0.5 mg
℞ only
suboxone.com

Buprenorphine

Partial agonist

binds very tightly to mu receptors but only partially stimulates them

Very high affinity for mu receptors

Will displace other opioids (heroin, morphine, etc) and precipitate withdrawal
If bound, not displaced by heroin, morphine

Analgesic

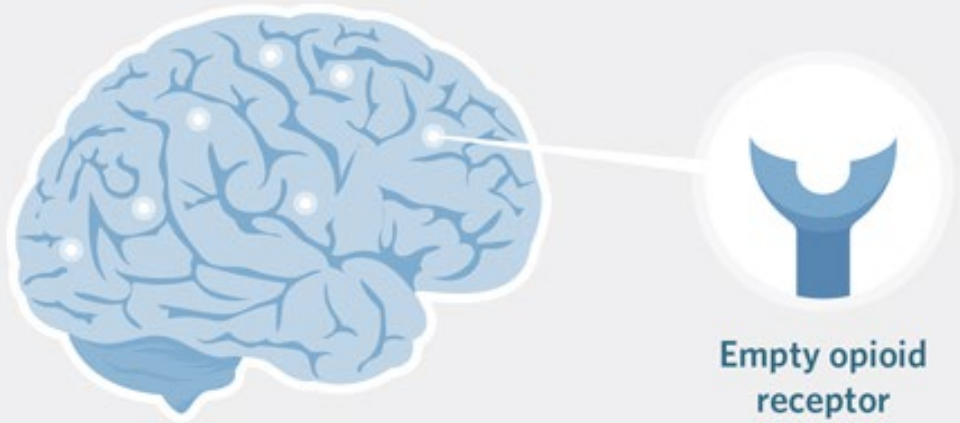
Can divide patient's typical dose into more frequent (e.g BID) dosing for acute pain

known liver failure or LFTs >5x normal limit
known active significant polysubstance abuse (benzos use controversial)

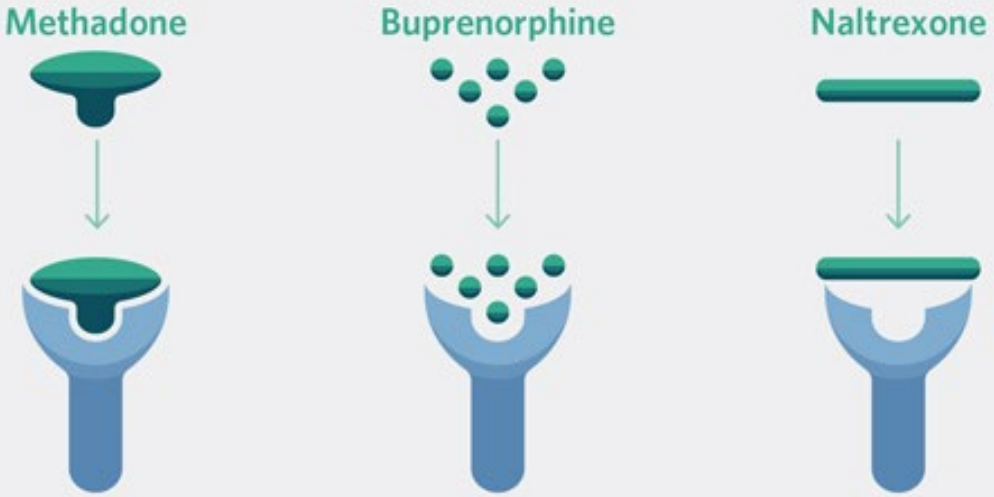
methadone use in 36-48 hrs, not in withdrawal, on chronic pain meds

safe in pregnant patients and lactation but recommend OB consult

@FOAMpodcast



Empty opioid receptor



MAT guided by COWS

Appendix A - Clinical Opioid Withdrawal Score (COWS)

PATIENT NAME:	DATE OF ASSESSMENT:
PATIENT DATE OF BIRTH:	MEDICAL RECORD NUMBER:

Clinical Opioid Withdrawal Score (COWS)

For each item, write in the number that best describes the patient's signs or symptom. Rate only the apparent relationship to opiate withdrawal. *For example: If heart rate is increased because the patient was jogging just prior to assessment, the increased pulse rate would not add to the score.*

Enter scores at time zero, 30 minutes after first dose, 2 hours after first dose, etc.	Time:	Time:	Time:	Time:
Resting Pulse Rate: *Record beats per minute after patient is sitting or lying down for one minute* • 0 - pulse rate 80 or below • 1 - pulse rate 81–100 • 2 - pulse rate 101–120 • 4 - pulse rate greater than 120				
Sweating: *Over past ½ hour not accounted for by room temperature or activity* • 0 - no chills or flushing • 1 - subjective chills or flushing • 2 - flushed or observable moistness on face • 3 - beads of sweat on brow or face • 4 - sweat streaming off face				
Restlessness: *Observation during assessment* • 0 - able to sit still • 1 - reports difficulty sitting still, but is able to do so • 3 - frequent shifting or extraneous movement of legs/arms • 5 - unable to sit still for more than a few seconds				
Pupil size • 0 - pupils pinned or normal size for light • 1 - pupils possibly larger than normal for light • 2 - pupils moderately dilated • 5 - pupils dilated that only rim of the iris is visible				
Bone or joint aches: *If patient was having pain previously, only the additional component attributed to opiate withdrawal is scored* • 0 - not present • 1 - mild/diffuse discomfort • 2 - patient reports severe diffuse aching of joints/muscles • 4 - patient is rubbing joints or muscles and is unable to sit still because of discomfort				
Runny nose or tearing: *Not accounted for by cold symptoms or allergy* • 0 - none present • 1 - nasal stuffiness or unusually moist eyes • 2 - nose running or tearing • 4 - nose constantly running or tears streaming down cheeks				
GI upset: *Over last ½ hour* • 0 - no GI symptoms • 1 - stomach cramps • 2 - nausea or loose stool • 3 - vomiting or diarrhea • 5 - multiple episodes of diarrhea or vomiting				
Tremor: *Observation of outstretched hands* • 0 - no tremor • 1 - tremor can be felt, but not observed • 2 - slight tremor observable • 4 - gross tremor or muscle twitching				
Yawning: *Observation during assessment* • 0 - no yawning • 1 - yawning once or twice during assessment • 2 - yawning three or more times during assessment • 4 - yawning several times/minute				
Anxiety or irritability • 0 - none • 1 - patient reports increasing irritability or anxiousness • 2 - patient obviously irritable or anxious • 4 - patient so irritable or anxious that participation in the assessment is difficult				
Gooseflesh skin • 0 - skin is smooth • 3 - piloerrection of skin can be felt or hairs standing up on arms • 5 - prominent piloerrection				
5—12 = mild; ***13—24 = moderate;*** ***25—36 = moderately severe;*** ***> 36 = severe withdrawal***	TOTAL				
	OBSERVER INITIALS				

Journal of Psychoactive Drugs Volume 35 (2), April - June 2003Source: Wesson, D. R., & Ling, W. (2003). The Clinical Opiate Withdrawal Scale (COWS). *J Psychoactive Drugs*, 35(2), 253–9.

Nicotine dependence

- Chantix
- Zyban (Buproprion)
- Replacement: Nicotrol, nicotine gum and patches
- 1-800-quitnow with free resources for many of these medicines

Common Symptoms of Nicotine Withdrawal


How does the NICOTROL Inhaler work?
A nicotine vapor cartridge is pierced when put into the inhaler.
NICOTINE
10MG
One cartridge lasts about 20 minutes with continuous puffing.
• Each cartridge delivers 4 mg of nicotine but only 2 mg is actually absorbed (similar to the amount of nicotine from 2 cigarettes).[1]

Oklahoma Tobacco Helpline

1 800 QUIT NOW

1-800-784-8669

OKhelpline.com

Street names for Xanax

benzodiazipines

- Dependence comes through prescriptions or diversion
- When this class of medicine launched, it was felt to be safe as it had better safety profile than barbituates
- Even long term prescription usage can lead to dependence, with cognitive impairment
- Avoid starting these medicines
- Controversy on whether/how to discontinue benzodiazepine treatment for patients who are on long-term treatment

benzos

Long ½ life

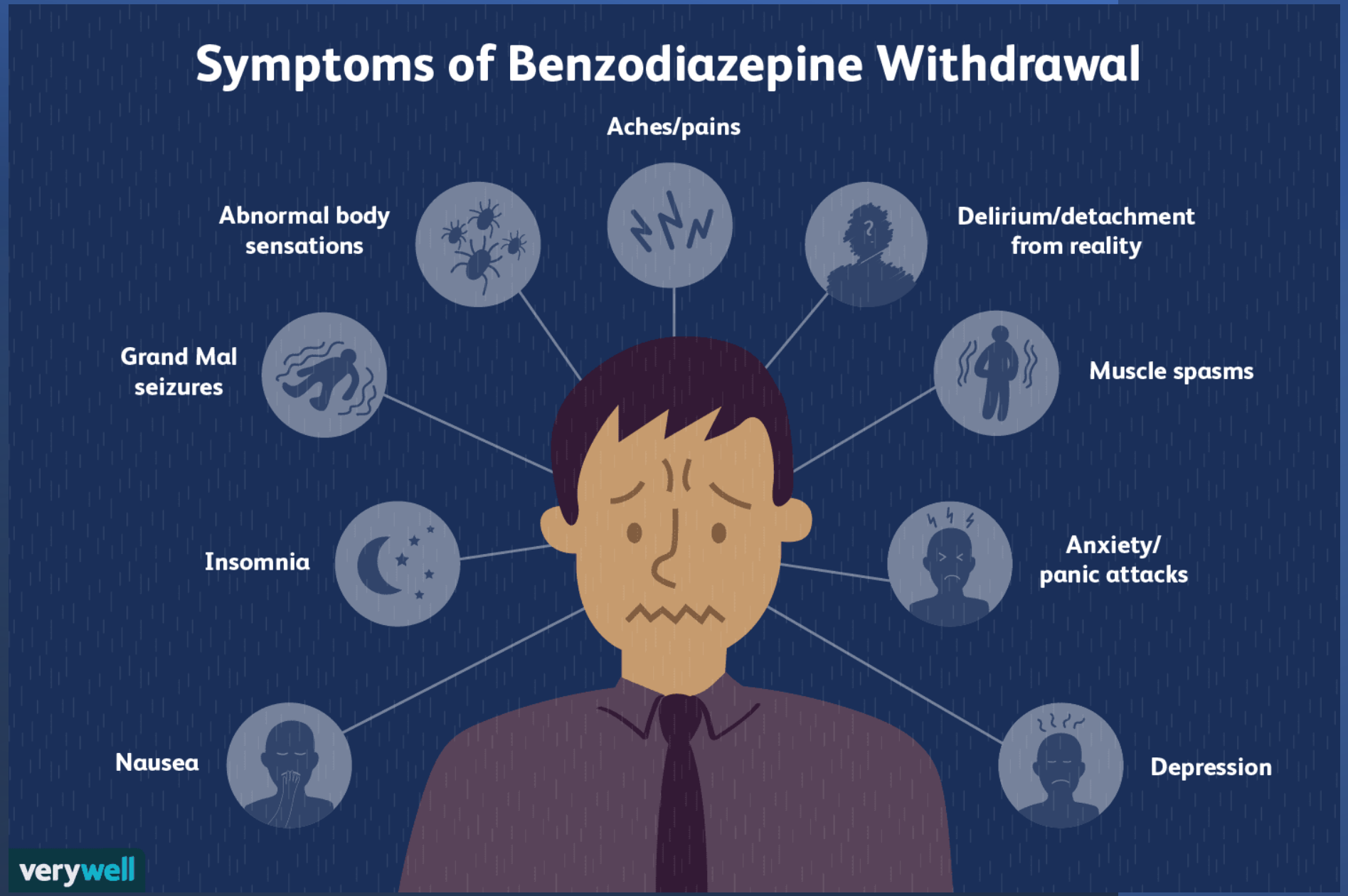
- Klonopin, Valium
- Less risk of inter-dose withdrawal
- Higher risk of build-up and significant cognitive impairment

Vs short ½ life

- Ativan, Xanax, Restoril, serax, tranxene
- Increased risk of inter-dose withdrawal
- Arguably less risk of cognitive impairment, dosing notwithstanding

BENZODIAZEPINE OVERDOSE SYMPTOMS

- DIFFICULTY BREATHING
- BLUISH TINGE TO THE LIPS
- CONFUSION OR DISORIENTATION
- EXTREME DIZZINESS
- COORDINATION ISSUES
- BLURRED VISION
- SEVERE WEAKNESS
- SEVERE TREMORS
- STUPOR
- COMA

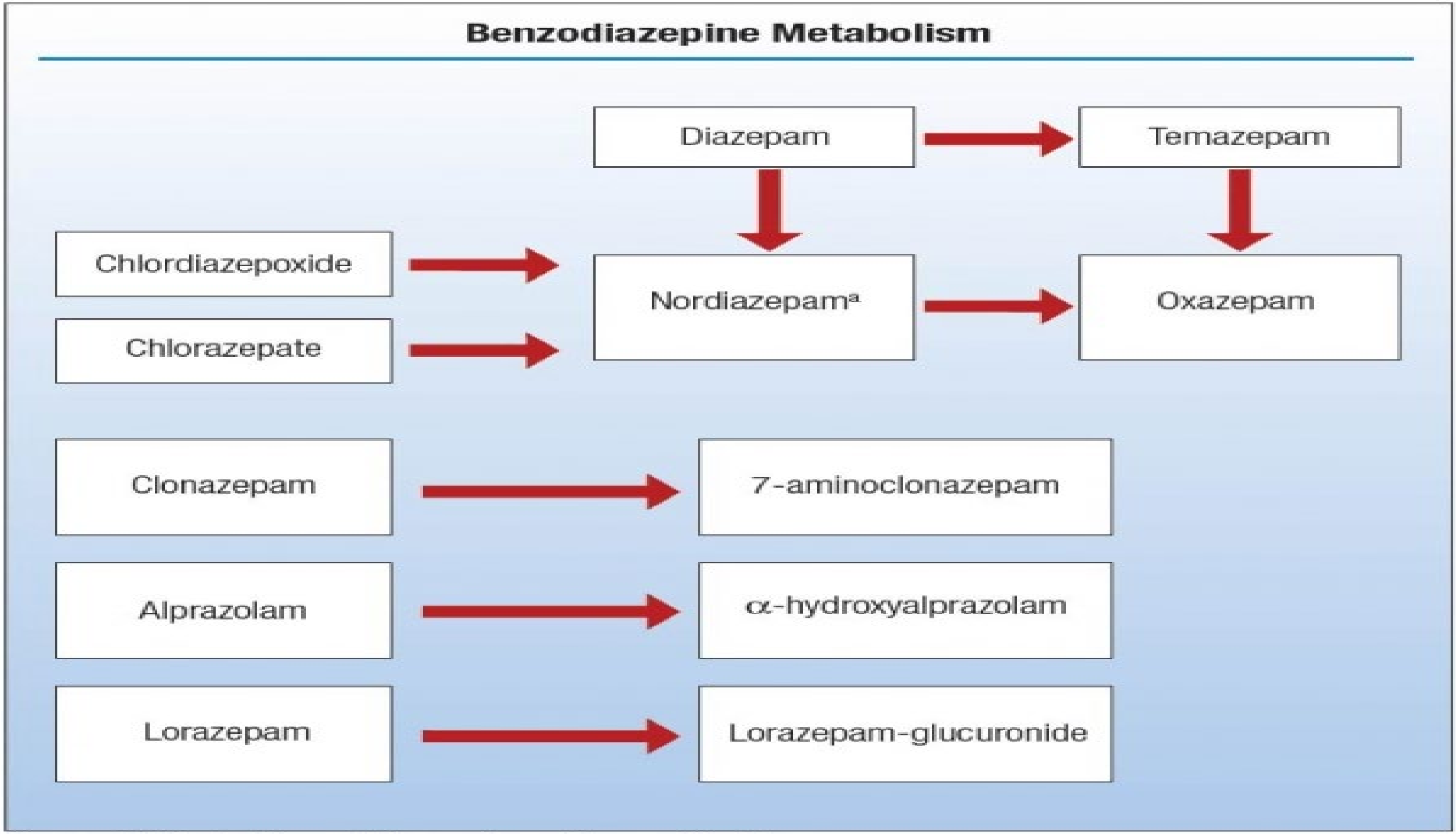

Symptoms of Benzodiazepine Withdrawal
Aches/pains
Abnormal body sensations
Delirium/detachment from reality
Grand Mal seizures
Muscle spasms
Insomnia
Anxiety/ panic attacks
Nausea
Depression
verywell

Benzo taper

Dependence can happen in the space of a few months

Taper can take months to years

Cognitive decline may or may not improve


Benzodiazepine Metabolism
Diazepam
Temazepam
Chlordiazepoxide
Nordiazepam[a]
Oxazepam
Chlorazepate
Clonazepam
7-aminoclonazepam
Alprazolam
α-hydroxyalprazolam
Lorazepam
Lorazepam-glucuronide

Benzodiazepine UDS

Positive for 1-10 days

False Positives: Zoloft, Oxaprozin

Stimulant Abuse

Methamphetamine

Prescription Diversion

Stimulant Abuse Treatment

- No FDA-indicated treatment

- Evidence that treating co-morbid ADD, if present, reduces relapse
  - Treatment often requires higher doses of stimulants
  - Preference for using extended-release versions
  - This data is most compelling for adolescent-young adult males

UDS-Stimulants

Positive: 1-5 days

False Positives: Atenolol, Wellbutrin, Ephedrine, Labetalol, Propranolol, Pseudoephedrine, Ranitidine, Trazodone

Psychological Effects

Intense Pleasure

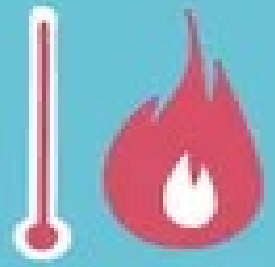
Memory of Euphoria (Risk for Addiction)

Talkative / Confident

Angry / Anxious / Paranoid

Physical Effects

Full-Body Stimulation



Very Hot Body Temperature

Nausea

Increased Heart Rate

Cocaine High

Extreme Use

Heart Problems*

Seizures

Death

Addiction

*May occur with minimal use in susceptible individuals

Cocaine Abuse Treatment

- No medicines FDA-indicated
- Dopamine agonists, like Adderall, show promise but are controversial
- Antabuse MAY have a role; also controversial
- Possibly Topamax; also off-label

Cocaine UDS

Positive for 1-3 days

False Positives: not much…

Live Resin

Shatter

Bubble Hash

Crumble

Budder

Sugar Wax

Marijuana UDS

Positive for 1-3 days (acute single use) OR up to 30 days (heavy daily use)

False positive: Efavarinz, ibuprofen, naproxen, pantoprazole

Treatment for Marijuana Abuse

No FDA-Indicated Treatment

Treat comorbidities including Attention Deficit Disorder

NAC (N-acetyl-cysteine) has some evidence for reducing marijuana cravings in adolescents

Marijuana as Medicine-Interactions and Medical Concerns

- THC: metabolized by CYP450 3A4 2C9 and inhibits 1A2, 2B6 2C9 2D6
- CBD: metabolized by CYP450 3A4, 2C9, and 2C19 and inhibits 3A4, 2B6, 2C9, 2D6, 2E1
- Data is evolving but likely multiple interactions; must be utilized with care
- Use is associated with upregulation of CB1 receptors: metabolic syndrome
- Upregulation of CB1 receptors also associated with increased compulsive behavior including alcohol use, drug addiction, increased smoking and compulsive eating

Working together as a team

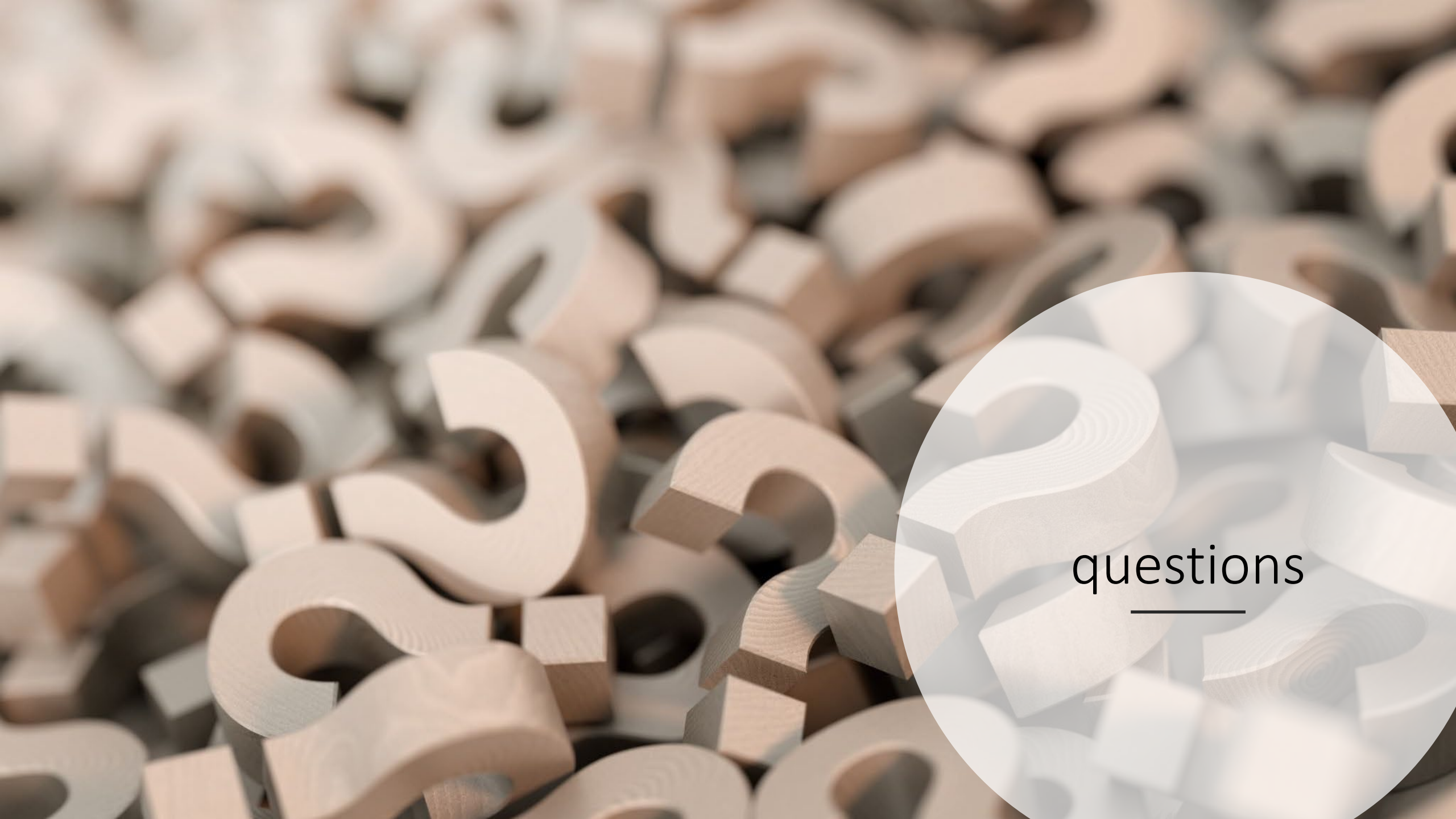
Medicine is very collaborative, with multiple people filling multiple roles

Ideal ways to collaborate—avoid triangulation!

- Sharing findings, observations—medicine effects, impacts, side effects with the prescriber
- Presenting diagnostic queries directly to the provider (avoid triangulation)
- Asking questions about medicines directly to the prescriber

Less helpful/harmful ways to collaborate:

- Questioning medicine choices, diagnoses with the patient
- Suggesting medicines to the patient to try. Especially controlled medicines. Especially benzos. No really. No, really.


questions

Can’t get enough?

Questions: I would love to answer your general medicine questions. I am not able to answer specific questions about specific patients.

Please let me know if you have questions about what was presented today.

I also crave feedback about this presentation. If there is constructive actionable feedback, please let me know!

Jenn Morris, (405)245-1721

Please note this is my personal cell; please do not release this to clients