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HY Psych, by Dr Michael D Mehlman

Defense mechanisms	
Mature	
- Mechanisms that are more adaptive, which means those that tend to lead to positive outcomes, effective stress management, and promotion of healthy functioning and coping. - They are considered to be "mature" because they are constructive ways of handling both internal and external challenges.	
Sublimation	- Redirecting unacceptable drives or impulses into socially acceptable activities. - Example: channeling aggressive impulses into sports, e.g., boxing.
Altruism	- Deriving gratification from providing money or a service to others. - Examples: donating money; volunteering at a foodbank.
Humor	- Appreciating the amusing nature of an adverse or anxiety-provoking scenario. - Example: inserting a light joke in a distressful situation.
Anticipation	- Experiencing emotional reactions in advance; anticipating consequences of possible future events; and considering realistic, alternative responses or solutions. - Example: preparing emotionally when a loved one has a terminal diagnosis.
Suppression	- Conscious removal a thought from one's mind in order to cope with difficult emotions; makes it possible to confront uncomfortable or distressing emotions when appropriate. - Example: consciously choosing to not think about the USMLE during the post-exam period while waiting on your score.
Immature	
- Less adaptive; can be detrimental with overuse.	
Repression	- Unconscious removal of unwanted memories, desires, or thoughts. - Example: a 25-year-old man has no recollection of going to counseling as a teenager when his parents were getting divorced.
Denial	- Refusing to accept reality or fact, acting as if a painful event, thought, or feeling did not exist. - Example: refusing to believe a medical diagnosis and not seeking treatment.
Projection	- Attributing one's own feelings, thoughts, or impulses onto another person. - Example: a man who is feeling guilty about leaving his partner accuses the partner of wanting to leave him.
Splitting	- Viewing other people as either all good or all bad, with no middle ground. - Example: a nurse inadvertently comes across rushed when attending to a patient; the patient now thinks all nurses at X hospital are inconsiderate and lack empathy.
Regression	- Reverting to an earlier, more primitive and child-like pattern of behavior. - Example: adult man starts sucking his thumb when confronted with heavy stress.
Displacement	- Redirecting emotions or feelings toward a substitute target. - Example: adult man loses temper with daughter because of marital stress.
Acting out	- Expressing unconscious emotional conflicts or feelings via actions rather than words or introspection. - Example: throwing a pillow when upset instead of thinking about or discussing the source of the frustration.
Reaction formation	- Transforming an unacceptable impulse into its opposite. - Example: a man who strongly dislikes his coworker treats him in an excessively friendly manner in an attempt to hide his true feelings.
Rationalization	- Crafting a positive explanation for thoughts and actions that are adverse. - Example: justifying that sneaking into a movie theater is okay because "everyone does it."
Intellectualization	- Using complex terminology or detailed explanations to detach oneself from the emotional aspect of a situation. - Someone diagnosed with a serious illness focuses on studying every detail about the disease, avoiding dealing with the emotional aspects.
Isolation of affect	- Separating feelings from ideas and events.

	- Example: a pedestrian discusses witnessing a man being killed to the police while showing no emotion.
Somatization	- Unconsciously converting distress negative feelings into physical symptoms. - Example: Experiencing stomach pain before a big presentation.
Passive-aggression	- Indirectly expressing aggression or negative feelings towards others, often through behaviors that are ostensibly neutral or even positive. - Example: A man might 'forget' to do a chore as a way to express resentment or anger towards a roommate without openly confronting the issue.

HY Therapy types	
- There's like 50 different therapy types we could discuss.	
Cognitive behavioral therapy (CBT)	- Focuses on identifying and changing negative thought patterns and behaviors. - The answer on USMLE for depression, eating disorders, OCD, and PTSD.
Dialectical behavioral therapy (DBT)	- A type of CBT that teaches coping skills for stress, emotional regulation, and interpersonal effectiveness.. - The answer on USMLE for borderline personality disorder.
Psychodynamic psychotherapy	- Focuses on unconscious processes, childhood memories, and unresolved past conflicts, aimed to increase self-awareness and understand the influence of the past on present behavior and thinking.
Electroconvulsive therapy (ECT)	- Electricity is passed through the patient's scalp, inducing a well-controlled seizure. - Used for depression refractory to other treatments, acute suicidality, catatonia, and severe mania (in bipolar I). - Can be used safely during pregnancy.

Depressive disorders	
Major depressive disorder (MDD)	- At least 5 out of 9 SIGECAPS must be present for at least a 2-week period. S – Sleep disturbance (insomnia or hypersomnia). I – Interest loss. G – Guilt or feelings of worthlessness. E – Energy loss. C – Concentration problems. A – Appetite changes (usually causes weight loss, but sometimes weight gain). P – Psychomotor agitation (restlessness; slowed speech or movements). S – Suicidal ideation. - The symptoms must cause socio-occupational impairment and must not be attributed to a substance or another medication condition. - As far as NBME Qs go, I can say that USMLE doesn't actually give a fuck about fulfilling the 5/9 criteria. They'll give you an elderly male who's a bit quiet + teary-eyed + who's had weight loss, and the answer is just depression. Students get confused because they don't count 5/9, but as I said, USMLE doesn't care. - It's to my observation that *weight loss* is one of the most buzzy indicators in a psych vignette that MDD is likely the answer. - Terminal insomnia (patient wakes up too early in the morning) can be seen. - Can cause ↓ libido, but patient still has nocturnal erections (asked on NBME). - Can be caused by beta-blockers (propranolol); asked on NBME. - Tx is with drugs such as SSRIs, CBT, and occasionally ECT.
Depression due to a medical condition	- Hypothyroidism is important cause of low mood and apathy. - USMLE likes post-MI and cancer diagnoses as causes of depression. - Q might give guy who's had weight loss + teary-eyed post-MI; answer on an NBME form is just sertraline (an SSRI).
Atypical depression	- Hypersomnolence + hyperphagia in the setting of depression that is reactive / ameliorates when positive circumstances present themselves.

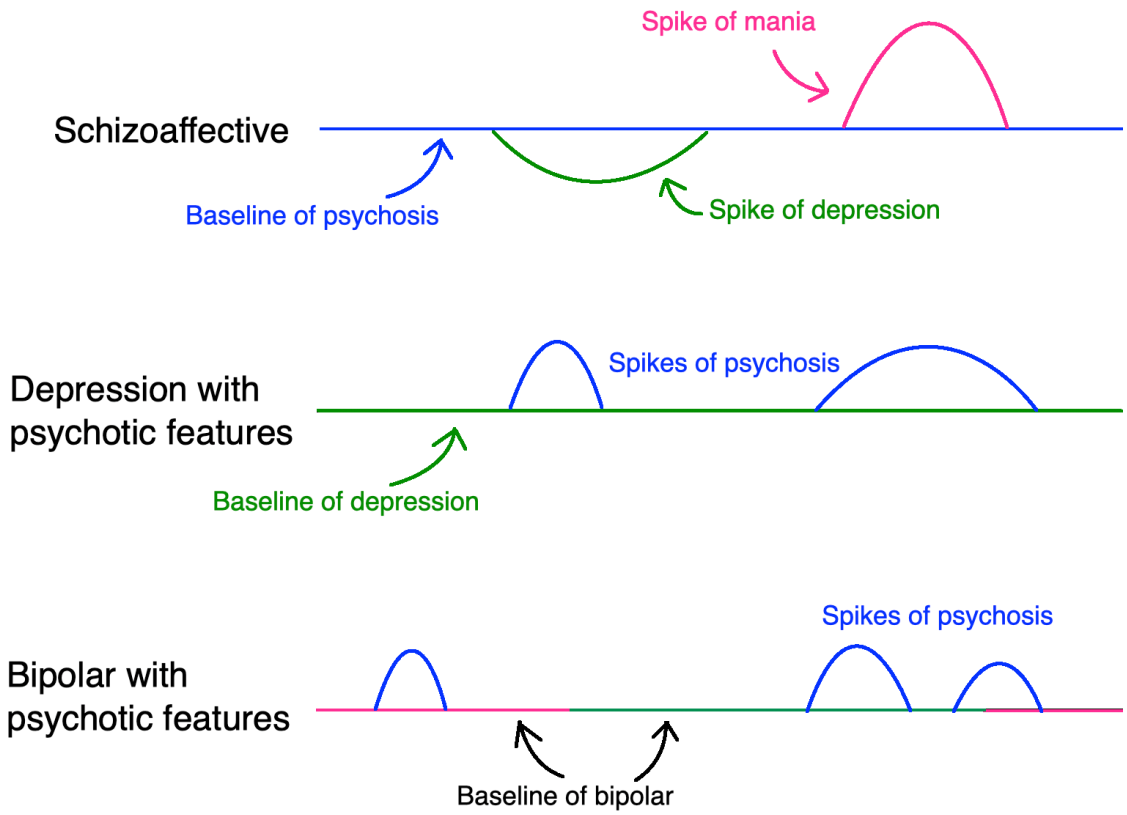
	- This latter aspect is called “mood reactivity,” where positive events of experiences can significantly improve mood; this distinguishes atypical depression from other forms of depression, where mood usually remains persistently low regardless of external circumstances. - Tx = CBT, SSRIs, or monoamine oxidase inhibitors (MAOIs). - MAOIs are considered to be highly efficacious but are not usually used first-line because of serotonin syndrome risk (discussed later).
Pseudodementia	- Not actual dementia. This is depression that presents as cognitive decline, usually in elderly. - Patients with depression who have apathy will perform poorly on the MMSE. - The Q might say the patient is unable to draw a clockface, but when prompted, is able to finish it quickly. They might also say patient remembers 0 out of 3 objects after 5 minutes. - Look for obvious signs of depression, such as short, quiet answers, and low mood.

Dysthymia and cyclothymia	
Dysthymia	- At least 2 years of depressed mood without fulfilling MDD criteria.
Cyclothymia	- At least 2 years of oscillation between depressed mood and hypomania (discussed below).

Bipolar disorder I and II	
- **DIGFAST** is the mnemonic for remembering how mania and hypomania present: - **D** – Distractibility (easily distracted / not able to focus). - **I** – Impulsivity (e.g., shopping sprees, reckless driving). - **G** – Grandiosity (inflated self-esteem / having sense of special powers or gifts). - **F** – Flight of ideas (rapidly shifting thoughts/ideas, sometimes with lacking coherence). - **A** – Activity increase (goal-directed activity; sexual activity; psychomotor agitation). - **S** – Sleep deficit (decreased need for sleep). - **T** – Talkativeness (pressured speech; term means haphazard loquaciousness, sometimes without pausing).	
Mania	- State of intensely elevated, expansive, or irritable mood, often with marked impairment in judgment. - Usually lasts longer than a week and causes socio-occupational dysfunction (i.e., the patient works as dentist and can’t go to work / has problems at work). - Can sometimes cause psychotic features and require hospitalization. - ↑↑ risk of suicide.
Hypomania	- Usually lasts longer than 4 days and does not cause socio-occupational dysfunction (i.e., the Q says patient works as dentist + maintains the job no issues). - Does not cause psychotic features and does not require hospitalization.
Bipolar I	- Diagnosed if patient has at least one manic episode, with or without a depressive episode.
Bipolar II	- Diagnosed if patient has at least one hypomanic episode + at least one major depressive episode. The patient must have never had a full-blown manic episode. - The reason at least one major depressive episode is required for diagnosis is because a hypomanic episode might be part of cyclothymia, rather than bipolar II, if the patient has merely experienced depressed mood in the past without a full-blown depressive episode.
- Treatment on USMLE is lithium or valproic acid. - Lithium can cause nephrogenic DI, hypothyroidism, and tremor. It is also a teratogen (causes Ebstein anomaly). New 2CK NBME has lithium causing **serotonin syndrome.** Very unusual/odd, but asked. - Valproic acid causes neural tube defects (interference with folate metabolism), tremor, and hepatoxicity. If the Q gives you increased LFTs + tremor, choose valproic acid over lithium.	

Psychotic disorders	
Schizophrenia	- Four points for diagnosis. 1) At least 6 months in duration. 2) Two or more of the following: - Hallucinations (always auditory on USMLE; hearing voices that aren't there). - Delusions (false beliefs; can be "bizarre," which refers to stuff like demons, aliens, and "the lord"). - Disorganized speech (often nonsensical or muffled speech). - Disorganized or catatonic behavior. - Negative symptoms (flattened/blunted affect, anhedonia [inability to feel pleasure], diminished speech). 3) Must have socio-occupational dysfunction (i.e., significant impairment in work, interpersonal relationships, or self-care). 4) Not attributed to a mood disorder (i.e., depression or bipolar), substance use, or another medical condition.
Schizophreniform	- Same as schizophrenia but 1-6 months in duration.
Brief psychotic disorder	- Same as schizophrenia but <1 month in duration.

Commonly confused conditions



Schizoaffective	- At least two weeks of psychosis without a mood disorder (i.e., neither depression nor mania/hypomania), followed by periods of time with simultaneous psychotic and mood disorder. - For example, the Q will say a college student has been hearing voices for the past 6 weeks + has been staying up all night for the past month (i.e., 4 weeks of mania or hypomania + at least 2 weeks of psychosis alone). - The name of the condition starts with "schizo," so you can remember that psychosis is the baseline of the disorder (i.e., what the patient will have as his/her underlying baseline). Then the mood disorder spikes on top of it.

Depression with psychotic features	- Depression, rather than psychosis, is the baseline. The patient will have periods of time in which he/she only experiences major depression without any type of psychosis. Then the psychosis periodically spikes on top of the depression.
Bipolar with psychotic features	- Bipolar is the baseline, where the patient will have periods of either depression *or* mania alone, followed by psychosis spiking on top of it. - If the patient has periods of mania alone followed by a simultaneous spike of psychosis, this makes the diagnosis easier. - If the patient has a period of depression alone followed by spiking psychosis, it can appear like depression with psychotic features, except the patient will *also* have a history of at least one manic episode in the past.

Delusion disorder
- One or more non-bizarre delusion, without other signs of psychosis. - By non-bizarre, as discussed earlier, this refers to potentially plausible scenarios (e.g., people at work are stealing from or trying to undermine you) that are not true, whereas bizarre on USMLE is anything that involves aliens, demons, the heavens, the lord, etc. - The person's behavior and thinking, apart from the delusion itself, tend to be normal. - Tx = CBT, anti-psychotics (e.g., risperidone), mood-stabilizers (lithium), and/or anti-depressants (SSRIs).

Grief (Bereavement)	
Normal	- No specific time frame, but usually < 6 months. - Normal progression is: Denial, Anger, Bargaining, Lamentation, Acceptance. - Gradual improvement (decreases over months). - Functional coping (maintains basic self-care, responsibilities, and socio-occupational function). - USMLE wants you to know that hearing voices of loved ones who've past away recently is normal (i.e., a 70-yr-old man sometimes wakes up in the middle of the night hearing his wife talking to him). But the voices will never be of the nature in which the patient is told to feel guilty or worthless.
Pathologic	- Can be >6-12 months. - Persistence / doesn't abate with time. - Functional impairment of daily tasks, neglect of self-care, or thoughts of suicide. - Hearing voices telling the patient he/she should feel guilty/worthless (i.e., the patient hears his uncle, who lives in another state, tell him he's worthless).

Anxiety disorders	
Generalized anxiety disorder (GAD)	- 6+ months of excessive and persistent worry about various aspects of life, often accompanied by physical symptoms like restlessness, fatigue, and muscle tension. - USMLE might give 40-year-old woman who is worried about many things (e.g., her son going to college, her work, her marriage, etc.) for 6+ months. - Patient can also have concurrent mood or psychotic disorder. In this case, the diagnosis becomes, e.g., "GAD with comorbid MDD." - Tx for GAD is CBT and SSRIs. - Buspirone (serotonin receptor agonist) can also be used.
Panic disorder	- Panic disorder is diagnosed if patient has 2 or more panic attacks + at least one month of worry about having more attacks. - A panic attack is an episode of intense fear that triggers severe physical reactions, even though there is no real danger or apparent cause.

	- USMLE will usually give patient with hyperventilation, where he/she feels like he/she is going to die or is having an MI. The USMLE is obsessed with making you think panic attack is cardiac. Don't get fooled. - Vignette can mention a mid-systolic click (mitral valve prolapse) + ask you the cause of the patient's symptoms → answer = panic disorder, not mitral valve prolapse. Student is confused because they say, "But wait, the patient has a mid-systolic click though." You're right. But the MVP itself isn't the cause of the patient's presentation. MVPs are common in the population and almost always asymptomatic. - Tx = breathing exercises to encourage the patient to stop hyperventilating. Breathing into a paper bag is wrong answer. Often times they won't have breathing exercises as an answer, where benzo is correct.
Social phobia	- Fear of being judged, negatively evaluated, or rejected in a social or performance scenario. Presents on USMLE as fear of public speaking. - USMLE wants beta-blocker (propranolol or atenolol) as 1st-line Tx. - If Q gives you an asthma patient, choose benzo. They make this distinction on NBME. - CBT for longer-term management.
Specific phobia	- Fear of a specific object or situation leading to significant distress or functional impairment. High-yield example on USMLE is fear of flying. - USMLE wants benzo for acute relief; CBT for longer-term.
Agoraphobia	- Fear of being in places or situations from which escape might be difficult or embarrassing, or where help might not be available if one were to have a panic attack. - This usually refers to crowded, open spaces.
Separation anxiety disorder	- Excessive distress with separation from home or major attachment figure. - Peaks at 12-18 months of age and usually subsides by 2-3 years, but children can still get this up into their teenage years. - USMLE can give a vignette of a child going to summer camp or school who gets stomach aches on arrival.
Selective mutism	- Disorder where patient fails to speak in certain situations, such as when confronted with new people, despite being able to speak in other situations.

PTSD vs Acute stress disorder	
PTSD	- Post-traumatic stress disorder; presents as at least 1 month of reliving a traumatic event, usually with flashbacks or nightmares about the event. - Treatment includes CBT and group therapy. - SSRIs if medication used.
Acute stress disorder	- Same as PTSD, but presenting for 3 days to <1 month since the traumatic event.

Adjustment disorder
- Socio-occupational dysfunction starting within 3 months of one specific stressor (i.e., a breakup, loss of job, death, illness). - Usually lasts <6 months. If longer than 6 months, it is called chronic adjustment disorder. - The key is the single stressor, whereas GAD is many, or no one specific, stressor. - The patient cannot have any psychotic symptoms but can have a mood disorder, where we call it "adjustment disorder with depressed mood," or "adjustment disorder with anxious mood," etc. I've seen NBMEs, particularly on 2CK psych forms, write answers like this. - First-line Tx is CBT and SSRIs.

Attention-deficit/hyperactivity disorder (ADHD)
- Inattentiveness (i.e., distractibility, not listening when spoken to) and/or hyperactivity (i.e., fidgeting, inability to remain seated or engage in activities quietly) *at home and at school.* The pattern of behavior must be consistent across venues and daily situations the child is immersed in. - Tx = 1st-line is stimulant meds, such as methylphenidate (Ritalin). Other non-stimulant meds, such as atomoxetine can be attempted 2nd-line. - External to meds, family therapy, behavioral skills training, and parenting skills training can be pursued. - Teenagers or adults can undergo CBT.

Obsessive-compulsive disorder (OCD)
- Obsessions = Unwanted and intrusive thoughts, images, or urges that cause significant anxiety or distress. - Example is constantly feeling the need to touch a doorknob correctly before opening the door. - Compulsions = Repetitive behaviors a person performs in response to an obsession. - Example is touching the doorknob repeatedly in order to make sure it is touched "correctly." - OCD is persistent obsessions and/or compulsions causing the patient significant distress or interfering with the patient's socio-occupational functioning. The patient need not have both in order to be diagnosed – i.e., a patient can just have either obsessions or compulsions alone. - A key point that distinguishes OCD from OCDP (obsessive-compulsive personality disorder, which I discuss below), is that OCD is ego-dystonic, whereas OCDP is ego-syntonic – meaning, in OCD, the patient doesn't like it / feels distressed; in OCDP, the patient is content / doesn't view anything as wrong. - Tx = CBT. If drugs, use SSRI or clomipramine (a TCA). The latter shows up on 2CK Psych form and is a mini-factoid about OCD (i.e., you can use the TCA clomipramine to treat it).

Conduct vs oppositional defiant disorder	
Oppositional defiant	- Argumentative and defiant behavior, often leading to problems at school with teachers and/or problems with grades. - The vignette can sound like normal teenage behavior, but the emphasis will be that there is impediment to social and/or scholastic progression. - Another key point is that there is no law-breaking. If the vignette mentions anything about crimes, then the USMLE wants conduct disorder instead.
Conduct disorder	- >6-month pattern of law-breaking starting age 17 or younger. - Vignette might give a teenager who engages in criminal behavior, such as killing a cat, destroying property, or engaging in theft. - USMLE won't necessarily present to you a pattern of ongoing behavior, but rather just a snapshot of a child + ask for the diagnosis – i.e., 14-year-old killed a cat; what's the most likely diagnosis → answer = conduct disorder (because what he did is a crime); oppositional defiant disorder is wrong answer.

Personality disorders	
Cluster A (odd, eccentric)	
Paranoid	- Suspicion of others intending to cause harm or deceive. - Reluctance to confide in others due to unwarranted fears that the information will be used against him or her. May bear grudges persistently. - Projection is a common defense mechanism.
Schizoid	- Pervasive pattern of detachment from social relationships and restricted range of emotional expression. The patient prefers being solitary, showing little interest in close relationships, and usually not wanting children. - The patient is ego-syntonic about not having social interaction, in contrast to avoidant personality disorder (discussed below), where the patient is ego-dystonic about it.
Schizotypal	- Cognitive and perceptual distortions accompanied by unusual beliefs.

	- Patient may have superstitious thinking or fixation on astrology or Buddhist temples, but he/she doesn't qualify for any psychotic disorder. - Often experience socio-occupational dysfunction, where they might appear odd or peculiar to coworkers, clients, or others.
Cluster B (dramatic, emotional, erratic)	
Borderline	- Unstable personal relationships, self-image, emotions, and impulsivity. - Patient can demonstrate parasuicidal behavior, which are suicidal gestures without true intent to commit suicide, such as slicing/cutting of one's wrists and legs. - Patient may have history of being engaged to multiple prior partners. - Tx = dialectal behavioral therapy (DBT).
Histrionic	- Attention-seeking, eccentricity, sexual suggestibility. - Patient is uncomfortable when not center of attention, often using their appearance to draw attention. - USMLE might give a female who is highly flirtatious and sexually provocative with her physician. They can also give a male who wears bright colors (i.e., a 44-year-old man presents to emergency high-energy and dressed all in yellow).
Narcissistic	- Inflated sense of self-importance; deep need for excessive attention and admiration; lack of empathy for others. - USMLE can give vignette of a patient who castigates medical staff for a doctor not starting an appointment at the scheduled time.
Antisocial	- Persistent law-breaking and violation of the rights of others. - Antisocial means criminal, not aversion to socializing, and is frequently misused. - Diagnosis of antisocial personality disorder is the same as conduct disorder but age 18+, where the patient breaks the law / commits crime. Diagnosis also requires evidence of conduct disorder age 15 or younger. - Person who commits singular crime (e.g., murder, theft) demonstrates antisocial behavior but doesn't have the personality disorder, unless there is evidence of persistence since age 15 or younger. - Cases that are borderline (i.e., CD starting at age 16 or 17) won't get asked on USMLE, but in real life, either further history is obtained to determine any law-breaking activity age 15 or younger, or alternative diagnoses are considered. - USMLE can make the vignette a little more tricky, e.g., by saying a guy cheated on his bar exam to become a lawyer (which is a crime). - Same as with conduct disorder, USMLE might give you a mere snapshot of a person at one point in time, without giving you a longer-term pattern of behavior, and the answer is still ASPD. But for real-life diagnosis, the patient must have longer-term pattern of behavior.
Cluster C (anxious, fearful)	
Avoidant	- Extreme social inhibition, inadequacy, and sensitivity to rejection or negative criticism. - Patient might be reluctant to engage in new activities or meet strangers due to fears of inadequacy; patient might view him or herself as socially inept or unappealing. - Ego-dystonic, as mentioned before, where the patient desires social interaction but is unable to engage in it. This contrasts with schizoid, which is ego-syntonic, where the patient prefers not to have social interaction.
Dependent	- Pervasive/excessive need to be taken care of; clinging behavior and fear of separation. - Patient will often go to great lengths to avoid being alone, constantly seeking to be physically close to intimate partner.
Obsessive-compulsive (OCPD)	- Preoccupation with orderliness, perfectionism, and control; patient is overly focused on productivity to the detriment of personal relationships, often with insistence that his/her way of doing things is the only right way. - The key here is that the pattern of behavior causes detriment to socio-occupational functioning – e.g., a secretary insists on reading every letter she prints a minimum of 9 times before sending it off to check for spelling errors, but this creates inefficiency at the office. - Ego-syntonic, whereas OCD is ego-dystonic.

Autism spectrum disorder (ASD)
- Neurodevelopmental condition characterized by repetitive patterns of behavior, interests, or activities, and persistent challenges in social communication and interaction. - Usually starts before age 3; more common in boys. - Child demonstrates difficulty understanding social cues, displays atypical speech patterns or body language, and/or intensely focus on specific activities. - Interest in linear patterns – i.e., trains, train tracks, and organizing toys in straight lines, can be seen. - Repetitive motions (stimming), such as rocking back and forth, are characteristic. - Patients with ASD might have reduced IQ at the expense of enhanced abilities elsewhere (e.g., painting). - Asperger disorder is a variant of ASD where IQ is normal or increased.

Eating disorders	
Anorexia	- Intense preoccupation with maintaining low body weight and an intense fear of gaining weight. BMI must be low (i.e., <18.5) for diagnosis. - Purging can be seen (not limited to bulimia). - Vignette can give girl who runs 12 miles per day and barely eats. - USMLE likes metatarsal stress fractures due to decrease bone density. - The Q can ask what the patient is at risk for later in life → answer = osteoporosis (reduced adipose → reduced estrogen). - Amenorrhea in females can be seen but is no longer mandatory for diagnosis. USMLE wants "abnormal GnRH pulsation" as the mechanism for amenorrhea in anorexia, where LH and FSH are both decreased. This is called hypogonadotropic, or central, amenorrhea. - BMI <15 or overt malnutrition is indication for hospital admission. - Tx is CBT and/or SSRI. Mirtazapine is an α2-antagonist that stimulates appetite and is used for patients with depression and anorexia. - Avoid bupropion in patients with eating disorders (lowers seizure threshold). - Most common cause of death is ventricular fibrillation due to hypokalemia. - Olanzapine can be used in theory (anti-psychotic that ↑ appetite).
Bulimia	- Binge eating followed by compensatory behaviors such as vomiting, excessive exercise, or the use of laxatives. - BMI is normal or increased (unlike anorexia, where it must be decreased). - Tx is CBT and/or SSRI.
Binge-eating disorder	- Frequent episodes of consuming large amounts of food in a short time period, often in secret; usually accompanied by feelings of guilt or shame. - Unlike bulimia, these episodes are not regularly followed by purging, excessive exercise, or other compensatory behaviors. - Tx is CBT and/or SSRI.

Dissociative disorders	
Dissociative identity disorder (DID)	- Presence of two or more distinct identities that take control of the patient's behavior, with memory gaps occurring during these transitions. - Individuals with DID often report experiences of "time loss" or being told of actions they don't recall performing.
Dissociative amnesia	- Inability to recall important personal information, typically related to a traumatic or stressful event, that goes beyond repression. The amnesia can result in loss of identity and/or life history. - Dissociative fugue is a subtype of dissociative amnesia. - Fugue = memory loss + travel, where the patient will have traveled to a destination (e.g., parking lot 50 miles from his/her home + doesn't know who he/she is when the police arrive).

Depersonalization / Derealization Disorder	- Patients feel that they are detached from themselves (depersonalization) or that the world around them is unreal or dreamlike (derealization). - Experiences can be distressing, but the patient is aware that these perceptions are not reflective of reality.

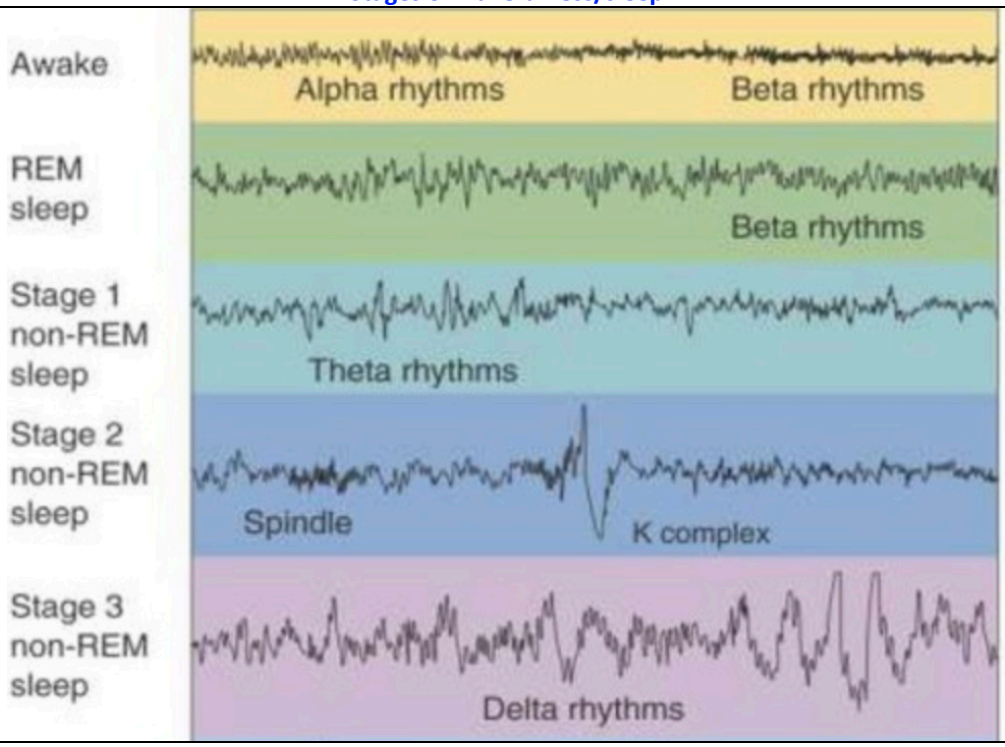
Somatic symptom and related disorders	
- Symptom generation and motive are both unconscious.	
Somatic symptom disorder	- One or more chronic somatic symptoms (e.g., GI disturbance/pain, adnexal pain, shortness of breath, neuropathic pain) that are distressing or result in socio-occupational dysfunction, but in which medical examination and diagnostic interventions cannot find any abnormalities.
Conversion disorder	- Neurologic deficits (i.e., paralysis, loss of function, numbness) usually following a stressor, e.g., loss of job, argument with spouse, etc. - Patient has La belle indifference, which refers to apparent lack of care or concern about the deficit (i.e., the patient supposedly can't move his arm but doesn't seem fazed by it). - Example is a child being dropped off at summer camp + says he can't move his finger → child is likely stressed by being separated from parents. - Hoarseness of voice shows up on NBME form where answer is conversion disorder. - NBME also gives guy with blindness in one eye, but there's no relative afferent pupillary defect (indicating CN II isn't fucked up), so Dx = conversion disorder. If you're confused about RAPD, go to HY Neuro PDF.
Illness anxiety disorder	- Formerly known as hypochondriasis. - Preoccupation with fear of having or acquiring a serious illness; worries persist even after medical reassurances of no significant health concern/risk.

Factitious disorders	
- Symptom generation is conscious/intentional; motive is unconscious. - Production of symptoms in factitious disorders is driven by a need to be seen as ill or injured, rather than for a tangible benefit such as drugs, money, or time out of prison. - Seeking medical attention/care is known as attempting to seek "primary gain," whereas something concrete like cash or time out of prison is "secondary gain."	
Factitious disorder imposed on self	- Formerly known as Munchausen syndrome. - Intentional production / feigning of physical symptoms (e.g., GI pain). - The primary motivation is to assume the sick role and receive medical attention, care, or sympathy. - Willing to undergo invasive procedures. The Q might say patient has history of cholecystectomy or appendectomy.
Factitious disorder imposed on another	- Formerly known as Munchausen syndrome by proxy. - Feigning symptoms in another person in order to achieve medical attention. - Considered a form of abuse. Can occur with parents or caretakers toward their children, elderly, or those in their care. - Needs to be reported.
Factitious thyrotoxicosis	- Injection of thyroid hormone. Aka surreptitious thyrotoxicosis. - USMLE vignette will usually make this an endocrine-type Q (see HY Endocrine PDF), where it need not be attached to the patient's desire to seek medical care (i.e., the patient could just be attempting to lose weight), however some patients will inject as a means to acquire medical attention. - Q need not say patient is a pharmacist (students use that as crutch).
Factitious use of glycemic meds	- Use of insulin or hypoglycemic meds (e.g., sulfonylureas) to achieve hypoglycemia or weight loss.

	- USMLE will usually ask this in the setting of C-peptide levels (i.e., low C-peptide indicates exogenous insulin; high C-peptide means either secretagogue abuse like sulfonylureas, or insulinoma). - Some patients use these meds to achieve medical attention.

Malingering
- Symptom generation and motive both intentional. - Aim is secondary gain – i.e., money, drugs, time out of prison/school. - Patient is not willing to undergo invasive procedures. For example, a prisoner complains of severe RLQ pain and feigns a rigid abdomen, but once at hospital, refuses to undergo laparoscopic appendectomy.

Stages of wakefulness/sleep



- Sleep is divided into Non-REM and REM. REM = rapid eye movements.
- Sleep cycles progress through the NREM stages, with REM occurring last. These cycles last ~90 minutes.
- As the night progresses, NREM sleep decreases and REM increases.
- Varenicline (smoking cessation agent) and efavirenz (HIV NNRTI) can cause wild/vivid dreams.

Awake; max cognition	- Gamma waves occur during periods of high concentration / max cognition. - These represent a low % of wakefulness and are the fastest brain waves.
Awake; eyes open	- Beta waves predominate during wakefulness. - High frequency, low amplitude waves, but not as much as gamma waves.
Awake; eyes closed	- Alpha waves. - High frequency and low amplitude, but not as much as beta waves.
Stage 1 sleep	- Theta waves. - Slightly slower and higher amplitude than alpha waves.
Stage 2 sleep	- K-complexes and sleep spindles.
Stage 3 sleep	- Delta waves. - Slow (low frequency), high amplitude waves. - New sleep categorizations have abolished Stage 4. Stage 3 is the deepest now. - Most rejuvenating sleep. - Sleep terror disorder (discussed below).

REM	- Beta waves similar to wakeful state. - Increased oxygen consumption by the brain; tumescence; muscles paralyzed. - Necessary for memory consolidation; infants have higher amounts of REM, suggesting it plays an important role in brain maturation and growth. - Nightmare disorder (discussed below).

Sleep disorders	
Narcolepsy	- Chronic sleep disorder affecting the brain's ability to regulate sleep-wake cycles normally. - Characterized by excessive daytime sleepiness, sudden episodes of muscle weakness (cataplexy), sleep paralysis, and hallucinations. The latter tend to occur prior to sleep (hypnagogic) or upon waking up (hypnopompic). - Thought to be due to deficiency of a neurotransmitter called orexin (aka hypocretin), which normally promotes wakefulness. - Treatment is modafinil (dopamine reuptake inhibitor + promotes release of orexin from hypothalamus).
Sleep apnea	- Can be obstructive (i.e., usually from obesity) or central (i.e., brain-related). - Chronic fatigue and poor oxygenation can lead to dysthymia / depression. The answer on NBME is "mood disorder due to a medical condition." - Polysomnography (sleep study) is what USMLE wants to diagnose. - When obstructive sleep apnea progresses to the point that the patient is a chronic CO_2 retainer with pulmonary hypertension and/or cor pulmonale, we call it obesity hypoventilation syndrome (Pickwickian syndrome). If you're confused about the cardio, go to the HY Cardio PDF.
Circadian rhythm sleep-wake disorder	- Misalignment between the individual's sleep pattern and the societal norm or natural environment. - Common types include delayed sleep phase disorder (going to bed / waking up later than desired), advanced sleep phase disorder (going to bed / waking up earlier than desired), and shift work disorder (struggle with sleep due to abnormal work hours).
Somnambulism	- Sleep walking. - Occurs during Stage 3 (deep) sleep.
Nightmare disorder	- Occurs during REM sleep. - Dreams often involve threats to survival or self-esteem, leading to awakenings and distress. - Episodes can be remembered by the patient after awakening since they occur during REM sleep.
Sleep terror disorder	- Often mistaken for nightmares; more common in male children and abates by pre-adolescence. - Occur in Stage 3 (delta wave) sleep. - Episodes where the patient somnambulates and can wake up at different location, often in a panic; can demonstrate violent behavior, such as pulling on the mother's arm to go outside, followed by awakening from the episode with no memory of what happened. - This is in contrast to nightmare disorder, where the patient remembers a dream + cannot somnambulate due to muscle paralysis during REM.
Restless leg syndrome	- Idiopathic, irresistible urge to move legs while in bed/sleeping. - Most common cause is iron deficiency anemia. First step is checking the patient's serum iron and ferritin. - If iron studies are normal, gabapentin and D2 agonists (ropinirole, pramipexole) can be used.

	- USMLE wants you to know that patients with RLS have increased risk of developing Parkinson disease, which makes sense since D2 agonists help, indicating a potential problem with dopamine signaling or production in some patients.
Insomnia	- Inability to obtain adequate sleep, either due to difficulty falling asleep, staying asleep, or waking up too early, leading to impaired daytime functioning. - USMLE wants benzo (usually clonazepam) for acute insomnia. - Terminal insomnia can occur in depression (waking up too early).

Tic disorders	
Tourette	- Neurologic disorder characterized by repetitive, involuntary movements and vocalizations (i.e., tics). - Motor tics range from mere eye blinking, head jerking, or shoulder shrugging to more complex movements such as hopping, twirling, or even mimicking others' actions. - Vocal (phonic) tics include throat clearing, sniffing, or humming. More complex vocal tics can involve repeating words or phrases, or shouting inappropriate words (coprolalia). - Haloperidol (typical anti-psychotic; D2 antagonist) and clonidine (α2 agonist) are two agents used to Tx that show up on NBME.
Provisional tic disorder	- In pediatrics it is normal for the kid to sometimes have a singular tic that lasts up to a year (e.g., unusual tongue or lip gesture). - There is very low chance of it progressing to chronic tic disorder / Tourette. - USMLE wants follow-up in 3-6 months as the next best step (i.e., observe).
PANDAS	- Pediatric Autoimmune Neuropsychiatric Disorder Associated with Streptococci, where Group A Strep pharyngitis can cause a tic disorder, OCD, or ADHD in the weeks following infection. - USMLE will give you kid who had sore throat two weeks ago + now has a new-onset tic, ADHD, or OCD, and they will ask what will most likely diagnose etiology for the disorder → answer = "anti-streptolysin O titers."
Drug-induced	- Stimulants such as methylphenidate, amphetamines, and caffeine can cause tics. - Tardive dyskinesia due to anti-psychotics is considered a type of tic disorder.

Miscellaneous body disorders	
Trichotillomania	- Pulling out one's hair; can be anywhere (i.e., eyebrows, scalp, etc.). - Patient may sometimes also eat his/her hair, leading to gastric bezoar (asked on NBME exam). This is an undigestible mass that can lead to bowel obstruction.
Skin-picking disorder	- Aka excoriation disorder. - Patient picks at his/her skin, leading to skin lesions.
Body dysmorphic disorder	- Excessive preoccupation with one or more aspects of one's appearance, leading to socio-occupational dysfunction.
- CBT can be attempted for all of these conditions, otherwise anti-depressants like SSRIs can be tried.	

Important child abuse findings
- Spiral fractures (rotational/twisting force applied to bone). - Posterior rib fractures (squeezing). - Circular burns (cigarettes). - Burns sparing flexor regions (from being dipped in hot water [child flexes limbs to ↓ exposed surface area). - Retinal detachment / hemorrhages. - Subdural hematoma (shaken baby syndrome).

- **Avoidance of eye contact** (if they say Hx of meningitis, think instead neurosensory hearing loss).

Important developmental milestones
- What USMLE will do is ask "normal" or "delayed" for Gross motor, Fine motor, Verbal, and Social. - Highest yield points regarding milestones: - Gross motor: o Head up at 3 months (can support his/her own head unassisted). o Turn over front to back at 4-5 months. o Sits up at 6 months. o Crawls by 9 months. o Stands/walks alongside sofa at 10-11 months. o Walks at 12-15 months. - Fine Motor: o Pincer grasp at 9 months. o Stacks 3, 6, 9 blocks at age 1, 2, 3, respectively. o Copies circle at 3-4 years. o Copies square at 4-5 years. o Copies triangle at 5-6 years. - Language development: o "Mama" and "dada" by 1 year. o Recognizes own name by 1 year. o 2-word sentences at age 2. o 900 words at age 3. - Social: o Social smile at 2-3 months. o Stranger anxiety at 6-9 months. o Separation anxiety at 9-14 months. o Imaginary friends are normal at age 4-6 (Peds shelf likes this; no this is not psychosis). o Repeated questioning about death is normal age 8-10. o Parallel play age 2-3 (kids play side by side); cooperative play age 3-4.

Peds bladder/bowel control	
Enuresis	- Nocturnal enuresis (i.e., wetting the bed) is normal on occasion up through age 5. - First step in ↓ recurrence is behavioral science-type answers (i.e., ↓ stressors + ↑ time spent with child). Q might say child wets the bed after a sibling is diagnosed with ALL (i.e., stressor). - After behavioral-type answers, the next step is star chart (positive reinforcement), where the child receives a star on a chart every time he/she doesn't wet the bed, where after, e.g., 10 stars, he/she gets an extra dessert. - If star chart is not listed, enuresis alarm is the next best step (i.e., literally an alarm that detects moisture in a child's underwear, typically using a sensor, where if moisture is detected, indicating urination, the alarm sounds or vibrates child awake, thereby encouraging him or her to stop urinating and go to instead use the toilet). - Answers such as imipramine, desmopressin, and water deprivation are wrong on USMLE.
Encopresis	- Shitting your pants. Normal on occasion up through age 5.

Repro/Obgyn Psych conditions	
Depression during pregnancy	- Sertraline is first SSRI used due to lower risk profile. - Electroconvulsive therapy (ECT) is used for women who have suicidal/homicidal ideation, or who are refusing to eat or drink. - ECT is generally considered to be safe for the fetus when performed appropriately and with careful precautions.
Bipolar during pregnancy	- Avoid lithium because of its teratogenic effects (Ebstein anomaly). - Avoid valproic acid because it causes neural tube defects and cognitive impairment. - Bipolar is Tx in women planning to get pregnant, or during pregnancy, with agents such as lamotrigine, olanzapine, or quetiapine.
Postpartum blues	- Aka "baby blues"; normal, transient postpartum psychologic state characterized by sadness, anxiety, mood swings, and insomnia. - Peaks in first week. If >10 days on USMLE, think postpartum depression instead. - Resolves without intervention. - Thought to be related to the sudden hormonal shifts and physical and emotional adjustments postpartum.
Postpartum depression	- Characterized by persistent sadness, anxiety, and exhaustion that can hinder daily care activities and bonding with the baby. - The answer on USMLE if the vignette mentions thoughts of worthlessness or guilt, especially after 10 days postpartum. - Vignette might say the woman leaves her baby in crib alone crying for long periods of time, or the child has soiled diapers (i.e., not catered to) → answer = "immediate psychiatric referral." - If SSRI is used, sertraline or paroxetine are often used because of ↓ concentration in breast milk.
Postpartum psychosis	- Extreme mood swings, hallucinations, paranoia, and attempts to harm oneself or the baby; occurs in first few weeks postpartum. - Answer = immediate psychiatric referral. - Medications used are anti-psychotics, usually olanzapine or risperidone.
Premenstrual syndrome	- Mood swings, breast tenderness, and irritability occurring in the luteal phase (i.e., the two weeks prior to menses). - Common; benign; thought to be due to hormonal fluctuations.
Premenstrual dysphoric disorder	- Severe, sometimes incapacitating, form of premenstrual syndrome. - Characterized by significant mood disturbances and physical symptoms that dramatically interfere with socio-occupational functioning. - Also thought to be due to hormonal fluctuations. - SSRIs are often first-line.

HY dementia types	
- General term for loss of memory, language, and problem-solving abilities that interfere with daily life.	
Alzheimer	- Gradual-onset idiopathic cognitive decline. - Patient must have normal neurologic exam (i.e., no motor or sensory abnormalities). - MMSE score will be low (i.e., low-20s out of 30), and the patient will put in effort during the test. - Beta-amyloid plaques and neurofibrillary tangles (hyperphosphorylated tau protein) seen on brain biopsy. - Early-onset Alzheimer in Down syndrome (amyloid precursor protein gene is located on chromosome 21). - Presenilin gene mutations can cause Alzheimer (on NBME exam). Presenilin is a protein involved in the cleavage of amyloid. - Tx = cholinesterase inhibitors (donepezil, galantamine, rivastigmine); memantine (NMDA glutamate receptor antagonist) can also be used. - Sundowning is worsening of dementia at night that can resemble delirium.

	- 1st-line Tx for sundowning on NBME is "decrease ambient noise and distractions." "Bright illumination of the room at all times" is wrong answer.
Frontotemporal dementia	- Aka Pick disease. - Presents usually as triad of 1) personality change, 2) apathy, and 3) disinhibition. - Accumulation of hyperphosphorylated tau protein (similar to Alzheimer), except rather than accumulating as neurofibrillary tangles, it accumulates as round, silver-staining inclusions knowns as Pick bodies.
Lewy body dementia	- Dementia + visual hallucinations + Parkinsonism. - Lewy bodies are collections of alpha-synuclein. This protein is deposited throughout the brain in Lewy-body dementia. In Parkinson disease, in contrast, it is deposited primarily in the substantia nigra pars compacta of the midbrain.
Vascular dementia	- Aka multi-infarct dementia. - The answer for dementia + motor/sensory abnormalities. - Seen in patients who have repeated mini-strokes (cerebral infracts) due to hypertension. - Resources tend to focus on this notion of "step-wise decline" (i.e., concrete timepoints at which deficits started), but it's to my observation on NBME exams that this is rarely a salient aspect of Qs. What USMLE likes is giving motor and/or sensory deficits – i.e., you'll get a big paragraph with dementia, and you'll notice somewhere in the stem that the patient has, e.g., 3/5 strength in the right upper extremity. This indicates Hx of stroke.
AIDS	- Just be aware AIDS can cause dementia, known as AIDS complex dementia. - Can present as "wet, wobbly, wacky," similar to normal pressure hydrocephalus.
Subacute combined degeneration	- The fancy name for neurologic degeneration seen in B12 deficiency. - Can present sometimes as a reversible cause of dementia. In elderly patients on tea and toast diets, or those in high-risk groups (i.e., vegans, pernicious anemia), B12 must be considered as cause of cognitive decline. - The patient can have peripheral neuropathy as a result of deficits to the 1) corticospinal tracts, 2) dorsal columns, and 3) spinocerebellar tracts. - The easy way to remember those three is to start by saying, "The spinothalamic tract is not involved." Then you say, "Well what are other ones I can think of?"
Neurosyphilis	- Just be aware that neurosyphilis is a reversible cause of dementia and should be considered. There's an NBME Q floating around for 2CK where they give (+) VDRL in 82-year-old woman with cognitive decline, and the treatment is penicillin.
Pseudodementia	- Not actual dementia. This is depression that presents as cognitive decline. - Patients with depression who have apathy will perform poorly on the MMSE. - The Q might say the patient is unable to draw a clockface, but when prompted, is able to finish it quickly. They might also say patient remembers 0 out of 3 objects after 5 minutes. - Look for obvious signs of depression, such as short, quiet answers and low mood.
Benign senility	- If the diagnosis is benign senility, MMSE will usually be 28+ on USMLE. - This contrasts with true dementia, where USMLE will give MMSE low-20s. - One of the highest yield points is you knowing that *if the patient complains, it's not dementia.* In real life, this is probably not a 100% rule, but on USMLE, it's HY way to distinguish. - Patients with true dementia either won't complain about it or just simply won't be aware of their cognitive decline. If the Q tells you the patient is concerned because she walked into a room and doesn't know why she went in there, it's benign senility, not dementia. - For true dementia, the vignette might say the adult daughter reports her mother left the stove burner on the other day and is unconcerned about it, or that she went for a walk the other day and she got lost and it took her hours to come home, or that the police brought her home.

Post-concussion syndrome
- A concussion is a type of traumatic brain injury caused by a blow to the head or by a sudden movement that results in the brain moving rapidly inside the skull. The rapid movement can cause brain cells to stretch and become damaged. - Post-concussion syndrome (aka post-concussive disorder) comprises a range of symptoms that can persist for weeks, months, or even years after a concussion. - Such symptoms include cognitive disturbance, memory loss, headache, and sensitivity to light or sound. - USMLE will ask for the diagnosis straight-up on Neuro forms.

Parkinson disease / Parkinson-plus disorders	
- A Parkinson-plus disorder is a disease that presents similarly to Parkinson disease, but it's not.	
Parkinson disease	- Loss of dopamine-secreting neurons in the pars compacta of the midbrain, with deposition of alpha-synuclein on biopsy. - Presents with classic features of bradykinesia/akinesia, resting tremor, shuffling, short-steppage gait, micrographia, and cogwheel rigidity. - Alpha-synuclein gene mutation most common; many genes implicated. - Carbidopa-levodopa is combo frequently used for Tx. Levodopa crosses the BBB to be converted to dopamine centrally. However, levodopa is subject to fast metabolism when administered alone. The addition of carbidopa functions as a competitive inhibitor of breakdown enzymes, resulting in increased levodopa availability for passage across the BBB. Do not confuse this mechanism with direct COMT inhibitors (tolcapone, entacapone), which prevent breakdown of L-dopa. - Carbidopa-levodopa can cause psychosis if administered in too-high a dose. This is assessed on 2CK Psych forms, where if patient gets psychotic episodes following recent addition of C-L to regimen, or following an increase in dose, the answer is simply "decrease dose of carbidopa-levodopa." "Discontinue carbidopa-levodopa is the wrong answer." - Be aware of D2 agonist names – i.e., ropinirole, pramipexole, cabergoline, pergolide, and bromocriptine, which can all in theory be used as treatments. - Amantadine increases presynaptic release of dopamine. - Selegiline inhibits monoamine oxidase B, which is an enzyme that preferentially breaks down dopamine. USMLE wants you to know this can cause serotonin syndrome, either alone, or in combo with drugs like St John Wort or SSRIs.
RLS	- Restless leg syndrome. - Idiopathic, irresistible urge to move legs while in bed/sleeping. - Most common cause is iron deficiency anemia. First step is checking the patient's serum iron and ferritin. - If iron studies are normal, gabapentin and D2 agonists (ropinirole, pramipexole) can be used. - USMLE wants you to know that patients with RLS have increased risk of developing Parkinson disease, which makes sense since D2 agonists help, indicating a potential problem with dopamine signaling or production in some patients.
NPH	- As discussed earlier, normal pressure hydrocephalus presents as "wet, wobbly, wacky" +/- Parkinsonism. - The parkinsonism is the most overlooked detail by students, who will usually only know the wet, wobbly, wacky part. - What the USMLE will do is give you an older male who has WWW triad + they give you 2-3 more sentences describing what sounds like Parkinson disease, where you're like "What the hell? Is this Parkinson disease?" No. It's just NPH, which is a Parkinson-plus disorder, where it can look like Parkinson disease but it ain't. - Once again, due to impingement on the corona radiata, and the mechanism they want for urinary incontinence = "failure to inhibit the voiding reflex."
Wilson disease	- Parkinsonism in a young patient is Wilson disease till proven otherwise.

	- Excessive copper accumulation in tissues, including the basal ganglia and liver, due to inability to excrete it into bile. - I discuss this stuff in more detail in the HY Gastro PDF.
Lewy body dementia	- As discussed before, this is a Parkinson-plus disorder. - The patient will have dementia + visual hallucinations + Parkinsonism.
Progressive supranuclear palsy	- Obscure condition that gets asked on 2CK. - You just need to know that 100% of questions will say "axial dystonia + Parkinsonism," where they'll just ask for diagnosis straight-up. - Axial dystonia is a type of muscle condition resulting in abnormal posture and movement of the spine and torso.
MPTP	- Aka synthetic heroin. - Just know it is a cause of Parkinsonism. - Shows up on a 2CK Psych form. Students are like wtf?

Tremor types for USMLE	
Essential	- Autosomal dominant intention tremor. - Can occur at any age, but usually middle age and older. - Patients self-medicate with alcohol, which ↓ tremor. - Propranolol (beta-blockade) is treatment.
Resting	- Parkinson disease (or Parkinson-plus disorder) in older patients. - Wilson disease till proven otherwise in younger patients.
Intention	- Cerebellar lesions or essential tremor.
Drug-induced	- Lithium and valproic acid can both cause tremor. - Lithium is classic for tremor, but an NBME Q gives valproic acid as correct answer (and lithium wrong answer) for patient who has tremor + abnormal liver function tests, since valproic acid is known for hepatotoxicity but lithium is not. - Albuterol (β2-agonist for asthma) shows up in an NBME Q as causing tremor. - Alcohol withdrawal (delirium tremens). Treat with benzo.

Encephalopathy	
- General term that refers to altered brain function (usually presenting as confusion) due to various causes.	
Hepatic	- Seen in alcoholism due to hyperammonemia. - Classically occurs on USMLE when there is an ↑ in blood in the GI tract, such as following acute variceal bleed. Blood is broken down in the GIT into proteins that liberate amino acids, which are converted by gut bacteria into ammonia that is absorbed. - Lactulose is important drug for USMLE for treatment of hepatic encephalopathy. It is a sugar that is broken down by gut bacteria into acidic products. This leads to the conversion of ammonia into ammonium. The latter is ionic and not readily absorbed. The USMLE wants "acidification; ammonium" as the answer for what happens when we give lactulose. - Neomycin is another drug for hepatic encephalopathy. It is an aminoglycoside antibiotic that kills ammonia-producing gut bacteria.
Uremic	- Confusion in the setting of renal failure due to elevated blood urea nitrogen.
Metabolic	- Confusion due to electrolyte imbalances, hypoglycemia, and thyroid storm.
Toxic	- Mental status changes due to toxins. Reye syndrome and lead poisoning are HY.
Inflammatory	- Herpes encephalitis (infectious). - Encephalitis is infection of the substance of the brain, causing confusion (encephalopathy). - Infection + confusion = encephalitis; infection + stiff neck and/or photophobia = meningitis. - Lupus cerebritis (autoimmune).
Anoxic	- Confusion caused by diminished oxygen delivery to the brain.

Neuropathic pain disorders	
Diabetic neuropathy	- Presents as pain, paresthesia, and/or numbness in diabetic. - USMLE likes TCAs (i.e., amitriptyline) or gabapentin as first-line for Tx. - Use nortriptyline in elderly if a TCA is given (fewer side-effects).
Herpetic neuralgia	- Pain, burning, tingling experienced prior to, during, or after herpes or varicella (shingles) episode. - Acyclovir is used to treat the virus; gabapentin used classically for the pain.
Post-trauma	- Patients who have injuries resulting in nerve trauma can sustain chronic neuropathic pain. Treat with gabapentin or TCAs. - Trauma can result in complex regional pain syndrome, which is neuropathic pain that occurs as sequela of injury that is disproportionate to the injury itself.
Thalamic pain syndrome	- Damage to the thalamus due to a stroke that results in body pain, usually contralateral to the side of the infarction, occurring many months post-stroke. - The answer on USMLE for severe limb pain many months following a stroke.

Seizure terminology	
FOAS	- Focal-onset aware seizure (FOAS). - Formerly known as simple seizures. - No loss of consciousness (LoC).
FOIAS	- Focal-onset impaired awareness seizure (FOIAS). - Formerly known as complex seizures. - LoC. - This includes staring into space blankly, as with absence seizures (discussed below).
Partial	- One part of the brain is affected. - Simple partial = no LoC + only affects one part of brain. - Complex partial = LoC + only affects one part of brain.
Generalized-onset	- Formerly known as generalized. - Dumb changes in nomenclature. But I don't know what to tell you. - Involves both cerebral hemispheres.
Tonic-clonic	- Aka "grand mal" seizure; type of generalized seizure. It is characterized by two phases: - Tonic phase: lasts a few seconds; muscles stiffen and the patient falls to the ground and loses consciousness. - Clonic phase: rhythmic jerking movements of the limbs; usually lasts several minutes. - Following the seizure (i.e., during the postictal phase), the patient may be confused, drowsy, and have no recollection of the seizure. - Tongue biting/lacerations are a HY post-seizure finding. If the Q tells you explicitly that the tongue is normal in this setting, they are telling you it is not a seizure. - Tx for recurrent seizures are agents such as valproic acid, carbamazepine, and phenytoin. I discuss these later in this PDF in the pharm section. - There is a difficult NBME Q where they tell you a patient has twitching of one arm prior to falling to the ground and having a tonic-clonic seizure. The answer on the NBME form is "complex partial," not generalized tonic-clonic. This type of seizure is called FOIAS with secondary generalization, or complex partial with secondary generalization. - In other words, if a patient has focal neurologic signs preceding a tonic-clonic seizure, this indicates an origin in one location prior to spreading to other areas.
Status epilepticus	- The updated definition is a seizure lasting >5 minutes, or 2 seizures within 5 minutes. - Definition used to be a seizure lasting >30 minutes, or 2 seizures within 30 minutes. - First-line Tx is a benzo (IV lorazepam is usually 1st-line, but USMLE doesn't care). - If benzo doesn't work, phenytoin (or fosphenytoin) is next, followed by barbiturates. - In other words, for USMLE: benzo → phenytoin → barbiturate (e.g., phenobarbital).
Myoclonic	- A type of generalized seizure that causes muscle jerks lasting less than a second. - A succession of jerks can be seen over a short time period.

	- The patient will not have loss of consciousness. - Can present similarly to simple partial, despite the EEG showing generalized activity.
Febrile seizure	- Fever can precipitate idiopathic seizure in 2-4% of children ages 6 months - 5 years. - About a two-fold risk progression to epilepsy compared to general population. - Tx is with benzodiazepine. - Febrile seizures lasting longer than 10 minutes, seizures that are recurrent within 24 hours, or focal neurologic signs more significantly ↑ risk of progression to epilepsy.
Absence seizure	- Vignette will be a kid staring off into space in class for 30 seconds spacing out, sometimes with rapid blinking. - This is considered loss of consciousness. - EEG shows symmetric 3-Hz spike-and-wave discharges. - Tx is ethosuximide (thalamic calcium channel blocker).

Epilepsy disorders	
Temporal lobe epilepsy	- Most common epilepsy disorder. Originates at the medial temporal lobe. - Seizures are often precedes by visual auras, or warning signs. These can manifest as gustatory/olfactory sensations or déjà vu. - FOIAS are most common type, with or without secondary generalization. - For USMLE, pick "medial temporal lobe," or just "temporal lobe," if they ask for the origin of a seizure in the absence of any preceding neurologic findings.
West syndrome	- Aka infantile spasms; X-linked recessive. - Epilepsy syndrome in infants characterized by – you'd never guess it – spasms. - Causes an abnormal EEG pattern called hypsarrhythmia, which is chaotic pattern. - Leads to intellectual disability. - Treatment is with ACTH (obscure, but apparently ↑ endogenous cortisol, which can mitigate the progression).
Lennox-Gastaut	- Severe childhood-onset epilepsy characterized by near-daily seizures and cognitive decline (hyperoralism is a sign of cognitive regression [babies put things in their mouths]). - Poor prognosis, with 5% mortality rate in childhood; 80-90% persistence of seizures into adulthood.
JME	- Juvenile myoclonic epilepsy. - Characterized by myoclonic jerks (usually hypnagogic and/or hypnopompic) that progress to tonic-clonic seizures after several months. - Age of onset is usually 10-16, but can also start in adulthood. - Tx is valproic acid.

WKS and ataxia	
- Ataxia is a neurological disorder characterized by a lack of coordination of voluntary muscle movements, leading to unsteady gait and difficulty with balance.	
WKS	- Wernicke-Korsakoff syndrome. - Damage to primarily the mamillary bodies due to thiamine (B1) deficiency. - Wernicke encephalopathy = **A COW** = **A**taxia, **C**onfusion, **O**phthalmoplegia, **W**ernicke. - Korsakoff psychosis = retrograde amnesia; causes confabulations, which means making up stories about the past because of loss of memory regarding prior events. - Therefore, WKS = A COW + confabulations. - Application to USMLE is that alcoholics presenting to hospital with confusion, ataxia, or eye findings require thiamine. - One NBME Q asks what giving thiamine will help reduce risk of in alcoholic → answer = anterograde amnesia (apparently by reducing risk of confusion due to Wernicke), where retrograde amnesia isn't listed as answer.

General Ataxia	- USMLE wants you to be able to differentiate ataxia caused by cerebellar vs dorsal column lesions. - Dorsal column lesions cause a (+) Romberg test, meaning the patient falls over when standing with the eyes closed due to loss of proprioception. - Cerebellar lesions won't cause a (-) Romberg test almost always due to maintenance of proprioceptive capacity.

Psychosomatic disorders	
Irritable bowel syndrome (IBS)	- Don't confuse with inflammatory bowel disease (IBD). - IBS is psychosomatic (i.e., psych-related) condition. - Classic vignette will be a woman 20s-40s with stress factors who usually has alternating diarrhea / constipation; can also present as bloating or cramping. - Key detail is that symptoms are relieved with bowel motions. - NBME assesses "smooth muscle hypersensitivity" as the answer for the mechanism for IBS. - Treatment for diarrhea-predominant IBS is loperamide, which is an opioid that causes constipation. USMLE will give vignette of IBS with diarrhea, and then the answer is just "mu-opioid receptor agonist."
Chronic interstitial cystitis	- Not an infection. - This is >6 weeks of suprapubic tenderness + dysuria (pain with urination) that is unexplained, where laboratory and urinary findings are negative. - They can mention **anterior vaginal wall pain** (bladder is anterior to vagina). - USMLE wants you to know you **don't treat.** Steroids are wrong answer. "Treatment" is standard placating placebo nonsense such as "education," "self-care" and "physiotherapy."
Fibromyalgia	- This is a psych condition, not an actual muscle disorder, but is often confused with polymyositis and polymyalgia rheumatica (see HY Anatomy/MSK PDF). - Labs will be normal. ESR will not be elevated. Patient will not have fever. - Will be described as woman 20s-50s with multiple (and often symmetric) muscle tenderness points. - Treatment is SSRIs. USMLE can write this as "anti-depressant therapy." This confuses students ("But she doesn't have depression though.") → Right. But SSRIs are still anti-depressant medication.
Pseudocyesis	- Aka false or phantom pregnancy. - Woman believes she is pregnant when she's not, where she will exhibit many of the signs and symptoms of pregnancy, such as amenorrhea, abdominal bloating, and breast enlargement/tenderness. - Can be idiopathic or induced by stressor (e.g., trauma of prior miscarriage).

Autoimmune neuropathies	
Multiple sclerosis	- T-cell-mediated attack against oligodendrocytes and myelin-basic protein. - Idiopathic autoimmune disorder classically in white women 20s-30s who live far from the equator. - Relapsing-remitting type is most common, where the patient will have repeated episodes of neurologic disturbances over many years at varying intervals. - Highest yield findings are optic neuritis and INO, as discussed above. - Urge incontinence is exceedingly HY. Some students ask about overflow incontinence due to MS; I've never seen this on NBME. Urge incontinence is what shows up all over the NBME forms for MS. I discuss the incontinences in extensive detail in my HY Renal and Repro/Obgyn PDFs. - MRI is gold standard for diagnosis, showing scattered white matter lesions within the CNS (i.e., both brain and spinal cord).

	- CSF analysis shows IgG oligoclonal bands. - Clonus and (+) Babinski sign (UMN findings) also HY. - Tx is steroids for acute flares (IV methylprednisolone). - β-interferon is what USMLE wants between flares to decrease recurrences. - Baclofen (GABA-B receptor agonist) is used for spasticity.
Neuromyelitis optica	- Aka Devic disease. - Sounds exactly like MS but they will say CSF oligoclonal bands are negative, and then the answer is just "antibodies against aquaporin-4." - You say Wtf? Not my opinion. It's asked on a 2CK Neuro form.
ALS	- Amyotrophic lateral sclerosis. - In ALS, the lateral corticospinal tracts (UMN) and anterior horns (LMN) degenerate. - There are two things you will see in all ALS Qs, making the Dx very easy: 1) The vignette will always have combination of UMN and LMN findings. Fasciculations, decreased reflexes, decreased tone, and muscle atrophy are classic for LMN. Babinski reflex, clonus, increased (brisk) reflexes, increased tone are classic for UMN. Serum CK can be elevated due to increased tone. 2) Must have **no** sensory findings. If any sensory abnormalities (i.e., paresthesias, numbness, etc.) are present in the vignette, ALS is the wrong answer. USMLE will often give vignette of ALS and then the answer is simply "motor neurons." - Knowing this second point in particular will help on difficult 2CK Qs, where you'll get a big paragraph + they say somewhere in the stem something about a sensory abnormality, and you can say, "Cool, not ALS." For 2CK, next best step in Dx = "electromyography and nerve conduction studies."
GBS	- Guillain-Barre syndrome (aka acute inflammatory demyelinating polyneuropathy). - T-cell- and antibody-mediated destruction of Schwann cells and myelin of peripheral nerves. - In other words, MS = CNS/oligodendrocytes; GBS = PNS/Schwann cells. - Can be described as "segmental and inflammatory demyelination." - Presents as ascending paralysis and loss of deep tendon reflexes. - Can affect both upper and lower limbs. - Symptoms can start as tingling in the hands and/or feet. - USMLE can say "weakness of proximal and distal muscles in lower limbs and weakness of distal muscles in upper limbs" → the implication is that the weakness has already ascended in the legs but not yet in the arms. - Textbook cause is *Campylobacter jejuni*, but in almost all Qs they will not give a patient who has bloody diarrhea after a BBQ. In other words, you can't use this as a crutch. They will just give you the symptoms alone and you have to know it's GBS.
CIDP	- Chronic inflammatory demyelinating polyneuropathy. - Vignette will sound exactly like GBS, but symptoms will be present for months and progress slowly. - GBS, in contrast, develops quickly over days and peaks within weeks. - In other words, if you get a vignette where it sounds like GBS, but they say the symptoms have been present for 4 months, that's CIDP, not GBS. There's one Q on a 2CK form on it.
CMTD	- Charcot-Marie-Tooth disease. - Obscure peripheral nerve autoimmune disease that is the answer on USMLE if they give you high-arched feet (pes cavus), hammer toes, and foot drop.
Bell's palsy	- LMN lesion of CN VII (facial nerve). - Paralysis of ipsilateral facial muscles. - Usually idiopathic/autoimmune following viral infection, shingles (i.e., Ramsay-Hunt syndrome II), or Lyme disease. - If the Q gives you Bell's palsy and asks for next best step, the answer is do serology for Lyme disease. If this isn't listed (or the patient doesn't live in endemic

	area, such as Africa), choose "no further diagnostic studies indicated." Nerve conduction studies are wrong (this is on NBME). Bell's palsy is a clinical diagnosis. - IV steroids, followed by a 10-21-day taper of oral steroids is indicated to minimize the immune response. - Ipsilateral hyperacusis (due to paralysis of stapedius muscle) and/or loss of taste to the anterior 2/3 of the tongue are basically nonexistent in questions. - There is a Q on NBME where they say patient has loss of taste following trauma + neurologic exam shows no abnormalities → answer = olfactory nerve (CN I) palsy, not CN VII, due to cribriform plate fracture (loss of smell means loss of most taste). If the Q wanted CN VII lesion, they would give a concurrent Bell's palsy presumably, since loss of taste wouldn't happen in isolation with CN VII palsy. - In contrast to CN VII lesion that is 19 times out of 20 LMN causing Bell's palsy, you should be aware that 1/20 are UMN, which results in loss of motor function of the contralateral middle and lower face, with the forehead spared.
PANDAS	- As discussed earlier, Pediatric Autoimmune Neuropsychiatric Disorder Associated with Streptococci is when Group A Strep pharyngitis, for some unknown magical reason, causes a tic disorder, OCD, or ADHD in the weeks following infection. - USMLE will give you kid who had sore throat two weeks ago + now has a new-onset tic, ADHD, or OCD, and they will ask what will most likely diagnose etiology for the disorder → answer = "anti-streptolysin O titers."
Sydenham chorea	- Autoimmune movement disorder seen as part of rheumatic fever. - Chorea = fast, purposeless, jerky movements. - Vignette will give child who has rheumatic fever and then ask about the cause of the movement disorder, and the answer is just "autoimmune." - I discuss rheumatic heart disease in detail in the HY Cardio PDF.
Myoneural junction disorders	
Myasthenia gravis	- Autoantibodies against post-synaptic nicotinic acetylcholine receptors. - Classic vignette is female office worker in her 40s who has triad of 1) diplopia, 2) dysphagia, and 3) ptosis that worsens throughout the day. - Gets worse with recurrent stimulation of muscle (vignette might say the patient cannot perform upward gaze for 60 seconds). - Tensilon test is administration of edrophonium (short-acting acetylcholinesterase inhibitor) → patient experiences significant improvement in symptoms. - Tx = pyridostigmine (longer-acting acetylcholinesterase inhibitor). - MG can be a paraneoplastic syndrome of thymoma. - 10-15% of patients with MG have thymoma. - If MG is diagnosed, a chest x-ray should be performed to look for thymoma. If the x-ray is abnormal, a CT scan is ordered. - Removal of the thymoma in these patients can significantly improve/cure the MG.
Lambert-Eaton	- Autoantibodies against pre-synaptic voltage-gated calcium channels. - Presents as proximal muscle weakness that improves with activity (vignette might say the patient tries to get up from a chair a few times before finally being able to). - Tensilon test does not significantly improve Sx in comparison to MG. - Highest-yield point is that it is a paraneoplastic syndrome of small cell lung cancer.

Vertigo	
BPPV	- Benign paroxysmal positional vertigo. - Vertigo is the feeling of the room spinning. - Brief episodes of dizziness, usually 30-60 seconds, sometimes with vomiting. - Caused by a semicircular canal otolith (ear stone; aka otoconia). - Otoconia made of calcium carbonate are normally found within the utricle and saccule of the inner ear and play a role in detecting acceleration and motion. If one becomes dislodged and enters the semicircular canals, BPPV results.

	- Diagnosis is made via Dix-Hallpike maneuver. In this test, nystagmus is induced when the patient is rapidly moved from a seated position to lying down with the head tilted backward and turned to one side. If nystagmus occurs, Dx = BPPV. - Tx is Epley maneuver, which is a series of head movements aimed at moving the semicircular canal otolith back to the utricle, thereby curing the BPPV.
Vestibular neuritis	- Viral infection + vertigo. - Inflammation of the vestibular nerve (branch of CN VIII, vestibulocochlear nerve).
Labyrinthitis	- Viral infection + vertigo +/- tinnitus. - Inflammation of both the vestibular nerve and cochlear nerve. - This distinction of "VN is just vertigo whereas labyrinthitis is also tinnitus" is perpetuated on the internet, but I can tell you there is an NBME Q for Step 1 (that is repeated across forms) where they don't mention anything about tinnitus and the answer is labyrinthitis (where vestibular neuritis isn't listed). This is why I write "+/-" for tinnitus above. - The tympanic light reflex can be abnormal, which can reflect increased middle ear pressure (sometimes seen with viral infection). I've seen the NBME write in the stem "abnormal light reflex," which is a confusing point, since this could be misconstrued as referring to the eyes, not the ear. The vignette in which they mention this they also have multiple sclerosis as a wrong answer + mention the patient has a sibling with MS. So the Q is dumb/gotchya-style overall. The key sentence in this NBME Q is that the patient had nausea and reduced ability to eat foods past few days, which implies recent viral infection.
Meniere	- Waxing and waning, asymmetric tinnitus and vertigo that has a slowly progressive course over many years. - Has a familial component but no strict inheritance (i.e., the vignette can sometimes mention a relative with similar findings). - Due to defective endolymphatic drainage. - Can cause low-frequency hearing loss (i.e., patient says it is difficult to hear conversations at the dinner table with many people). This is in contrast to presbycusis, which is high-frequency hearing loss in elderly.
Drug-induced	- Aminoglycosides (i.e., gentamicin, amikacin), chemo agents like cisplatin, and loop diuretics (furosemide, ethacrynic acid) are known for ototoxicity. - Keep point is that this ototoxicity need not be hearing loss and can be vertigo – i.e., the patient is receiving IV Abx for endocarditis treatment and feels like the room is spinning (ototoxicity due to gentamicin).

HY headache types	
Trigeminal neuralgia	- 11/10 lancinating, knife-like pain that occurs as episodes lasting usually <1 minute. - Classically brought on by minor stimuli, such as brushing one's hair/teeth, or a gust of wind. - Thought to be caused by trigeminal nerve irritation or impingement (i.e., at the exit points from the skull). - There is an NBME Q where they ask what part of the brain is fucked up (i.e., they don't list any nerves), and the answer is pons, since CN V originates from the pons. - Prophylaxis is carbamazepine. - There is no Tx for acute episodes since pain lasts such short duration. - Often confused with cluster headache if occurring in the V1 (ophthalmic branch of trigeminal nerve) distribution.
Cluster headache	- Male 20s-40s who wakes up from sleep with 11/10 lancinating, knife-like headache; often associated with ipsilateral lacrimation, rhinorrhea, and sometimes pupillary changes (I've seen NBME say ipsilateral miotic pupil). - Episodes last minutes to half hour (longer than trigeminal neuralgia), where the Q will say the guy wakes up from sleep + paces around his room until pain eventually goes away.

	- Prophylaxis is verapamil. - Tx for acute episodes is oxygen (bizarre, unless patient has O2 tank lying around).
Migraine	- Unilateral throbbing/pounding headache that lasts hours. - Can be associated with prodromal visual aura or sounds. - Prophylaxis is propranolol. - Tx is NSAIDs first, followed by triptans (e.g., sumatriptan). - Triptans are serotonin (5HT) receptor agonists. - Triptans are not prophylactic meds; they are only used as abortive therapy. - USMLE will give 30s female with hypertension who has migraine Hx, and the treatment is "beta blockade" for her HTN management. - Estrogen-containing contraceptives are contraindicated in patients who have migraine with aura.
Tension headache	- Bilateral, dull, band-like headache. - Treated with sleep and acetaminophen.
Temporal arteritis	- Aka giant cell arteritis. - 9/10 Qs will be painful unilateral headache in patient over 50. I've seen one Q on NBME where it's bilateral. - Flares can be associated with low-grade fever and high ESR. - Patients can get proximal muscle pain and stiffness. This is polymyalgia rheumatica (PMR). The two do not always go together, but the association is HY. (Do not confuse PMR with polymyositis. The latter will present with ↑ CK and/or proximal muscle weakness *on physical exam*. PMR won't have either of these findings. I talk about this stuff in detail my MSK notes.) - Patients can get pain with chewing. This is jaw claudication (pain with chewing). - Highest yield point is we give **steroids before biopsy** in order to prevent blindness. - An NBME has "ischemic optic neuropathy" as the answer for what complication we're trying to prevent by giving steroids in temporal arteritis. - IV methylprednisolone is typically the steroid given, since it's faster than oral prednisone. - It's to my observation many 2CK NBME Qs will give the answer as something like, "Steroids now and then biopsy within 3 days," or "IV methylprednisolone and biopsy within a week." Students ask about the time frames, but for whatever reason USMLE will give scattered/varied answers like that. - Another 2CK Neuro CMS Q gives easy vignette of temporal arteritis and then asks next best step in diagnosis → answer = biopsy. Steroids aren't part of the answer. Makes sense, since they're asking for a diagnostic step.

Delirium	
- Acute disturbance in attention and cognition, usually over hours to days. - Most commonly presents as hyperactive delirium, which is where the patient appears confused, restless, agitated, and combative. - Can also present as hypoactive delirium, where the patient mute, lethargic, or slow to respond to stimuli. - Important causes are infection, electrolyte disturbance (e.g., hypercalcemic crisis), medications (especially first-gen H1 blockers like diphenhydramine), and metabolic causes (e.g., hypercarbia in COPD exacerbation).	
Hypercalcemic crisis	- Refers to cognitive dysfunction / a delirium-like state in the setting of severe hypercalcemia, often due to malignancy or primary hyperparathyroidism. - I've also seen this once in a patient on a thiazide (can cause hypercalcemia). - USMLE wants you to know that high calcium, as well as any sodium disturbance, can cause delirium. - First step on USMLE for Tx of hypercalcemia is normal saline. - After normal saline, USMLE wants bisphosphonate therapy (I've seen pamidronate listed on NBME). - I've never seen calcitonin or loop diuretics as correct answers for hypercalcemia Tx. They're always wrong.

Medication-induced delirium	
Reye syndrome	- Acute encephalopathy and hepatic dysfunction caused by giving aspirin in the setting of a viral illness and/or fever. - Aspirin should be avoided under age 12, and some sources say avoid in teens for that matter. - Mechanism is obscure and thought to be related to impairment of β-oxidation.
Anti-cholinergic delirium	- Anti-cholinergic medications can cause confusion and a delirium-like presentation. Children have ↑ susceptibility. - Q can mention a kid was given an over-the-counter medication and now has low-grade fever and confusion. - Details such as flushed, dry, warm skin, or enlarged pupils, suggest anti-cholinergic delirium over Reye. - Can be confused with Reye syndrome if they just say "over-the-counter" med. - 1st-gen H1-blockers (i.e., diphenhydramine) are notoriously anti-cholinergic.
Dextromethorphan	- Can cause delirium and psychosis in children when taken in excessive amounts. - An opioid that is an anti-tussive (cough suppressant).
Alcohol withdrawal	
Alcoholic hallucinosis	- Presents 12-48 hours after the last drink. - Patient can have hallucinations, usually tactile (i.e., bugs crawling on skin) or visual (bugs crawling up wall). - Treat with benzo + thiamine.
Delirium tremens	- Presents 2-4 days following last drink. - Patient will have tremulousness, tachycardia, diaphoresis, and restlessness. - Seizures can also sometimes occur. - USMLE-favorite vignette is 40s male who gets tremulousness and tachycardia while in hospital 2ish days after surgery. Answer is just benzo. - Can also show up on NBME as a guy who goes from drinking 12 beers a day to suddenly only 2 beers a day. - Treat with benzo + thiamine.

CAGE Questionnaire for Detecting Alcoholism

Question	Yes	No
C: Have you ever felt you should **C**ut down on your drinking?	1	0
A: Have people **A**nnoyed you by criticizing your drinking?	1	0
G: Have you ever felt **G**uilty about your drinking?	1	0
E: Have you ever had a drink first thing in the morning (**E**ye opener)?	1	0

A total score of 0 or 1 suggests low risk of problem drinking
A total score of 2 or 3 indicates high suspicion for alcoholism
A total score of 4 is virtually diagnostic for alcoholism

Drug abuse	
Glue	- Ataxia + cognitive decline in teenager. - Will sound a bit like alcohol abuse but the effects of alcohol don't occur so young.
Paint	- Cognitive decline. - Q can say teenager is seen with gold or silver coloration around the nose/mouth.
Butane (inhalant)	- Cognitive decline. - Classically inhaling computer cleaner (dusters) or whipped cream bottles. - Q will say high schooler found on floor in school bathroom + is brought into ED sluggish + pupils and vitals all normal → answer = butane.
Caffeine	- Most common drug addiction in the world. - Adenosine accumulates in the brain throughout the day and causes sense of fatigue. - Caffeine blocks adenosine receptors, promoting sense of wakefulness. - Intoxication can cause sense of over-stimulation, panic, and palpitations. - Withdrawal can cause headache, sense of depression, fatigue, anxiety (i.e., sense of worry/doom), and inability to concentrate.
Smoking/vaping	- Nicotine can promote sense of euphoria. - Withdrawal can cause many symptoms, including anxiety, depression, difficulty concentrating, and weight gain due to increased appetite.
Marijuana	- Injection (redness) of conjunctivae + dry mouth. - ↑ risk of developing psychosis and schizophrenia.
Cocaine	- Mydriasis, tachycardia. - High BP causing aortic dissection; can cause chest pain (coronary vasospasm). - Abruptio placentae if pregnant teens. - Give benzo if acutely intoxicated + observe in emergency.
Amphetamine	- Mydriasis, agitation, **insomnia** / staying up all night. - Can cause tactile hallucinations. - Give benzo if acutely intoxicated + observe in emergency.
PCP	- Bellicosity / pugnacity (if you're ESL, those mean wanting to fight + aggressive). - **Nystagmus** +/- mydriasis. - One 2CK NBME Q gives mutism + constricted pupils for PCP + nothing about pugnacity, so just be aware this presentation is rare but possible. - Give benzo if acutely intoxicated + observe in emergency.
MDMA (ecstasy)	- Euphoria, heightened sensory perception, low-grade fever, bruxism (teeth grinding). - An NBME Q floating around gives increased creatine kinase, so this is also possible. - Give benzo if acutely intoxicated + observe in emergency.
LSD (acid)	- Visual hallucinations. - Give benzo if acutely intoxicated + observe in emergency.
MPTP	- Synthetic heroin. - Causes Parkinsonism. - Shows up on a 2CK form, so if you think it's weird, take it up with NBME, not me.
Heroin/opioids	- E.g., oxycodone or dextromethorphan. - Respiratory depression + constricted pupils + constipation. - Naloxone (opioid receptor antagonist) for acute toxicity. - Methadone (opioid receptor agonist) to ↓ relapses.
Benzos	- E.g., diazepam. - Respiratory depression. - Flumazenil to treat acute toxicity (benzodiazepine receptor antagonist).
Barbiturates	- Respiratory depression. - Q will say naloxone and flumazenil had no effect, so you eliminate to get to barbiturates.
Acetaminophen	- Fulminant liver failure. - Give activated charcoal if ingested within 1-2 hours. - *N*-acetylcysteine must be given after to regenerate reduced glutathione to prevent liver damage from NAPQI (acetaminophen metabolite).
Aspirin	- Tinnitus + mixed metabolic acidosis-respiratory alkalosis. - Give sodium bicarb to treat (↑ excretion through urinary alkalinization).

TCAs	- E.g., amitriptyline. - CCCs (coma, convulsions, cardiotoxicity). - ECG changes seen frequently in vignettes. For example, you'll get a big vague paragraph about some drug overdose + they say in last line QT is prolonged → answer = the TCA. Then you remind student about cardiotoxicity and they're like Oh yeah. - Anti-cholinergic effects (i.e., delirium + hot, red, dry patient).

Depression meds	
SSRIs	- Selective-serotonin reuptake inhibitors. - Fluoxetine, escitalopram, sertraline, etc. - Cause sexual dysfunction (anorgasmia) and sleep disturbance. - The fact that they cause anorgasmia actually makes them the Tx for premature ejaculation. - Do not combine with drugs such as monoamine oxidase inhibitors or St John wort, as this can cause serotonin syndrome (discussed below). - There are unique side-effects of various SSRIs – e.g., sertraline is more likely to cause diarrhea; fluoxetine has a stimulating effect and is more likely to cause insomnia; citalopram can prolong QT interval at higher doses. But USMLE doesn't give a fuck. - Used for a variety of psych conditions external to depression, e.g., fibromyalgia, OCD, etc. - It can take 4-6 weeks for an SSRI to achieve desired effect. If after this time point the drug isn't working, the first step is increasing the dose. If this doesn't work, the next step is switching to a different SSRI, followed by switching to a different class agent.
SNRIs	- Serotonin and norepinephrine reuptake inhibitors. - Desvenlafaxine, duloxetine, etc. - Can increase blood pressure at higher doses.
TCAs	- Block reuptake of both serotonin and norepinephrine. - Amitriptyline, nortriptyline, clomipramine, doxepin, etc. - High-yield on USMLE as 1st-line for diabetic neuropathic pain; can also be used for neuropathic pain in general (e.g., from trauma). Gabapentin is otherwise frequently used. - Have nasty anti-cholinergic side-effects (anti-DUMBBELSS; see HY Neuro PDF for discussion of anti-cholinergic vs pro-cholinergic effects if you're confused). - Three HY anti-cholinergic side-effect vignettes are 1) palpable suprapubic mass in an older male → full bladder as a result of anti-cholinergic med + BPH. 2) Hot, red, dry patient (as a result of anhidrosis). 3) Confusion + dilated pupils (anti-cholinergic delirium + mydriasis). - Coma, convulsions, cardiotoxicity. - Sometimes the Q can just mention prolonged QT interval in patient on an anti-depressant, and the answer is the TCA, since they're cardiotoxic. - If elderly, use nortriptyline, since ↓ BBB penetration and anti-cholinergic side-effects. - TCAs, such as imipramine, for nocturnal enuresis are wrong on USMLE. - Doxepin is asked on 2CK Psych form, where the Q rides on you knowing it's a TCA to get it right (i.e., the only drug listed that causes anti-cholinergic effects). I mention this because students get the Q wrong and then are like wtf is doxepin.
MAOIs	- Monoamine oxidase inhibitors. - Phenelzine, tranylcypromine. - Avoided 1st-line overwhelming majority of the time because of ↑ risk of serotonin syndrome. This can be in isolation, but also when commenced too soon following discontinuation of SSRI. - Selegiline is MAO-B inhibitor used for Parkinson disease. Answer on NBME where they ask which Parkinson med caused serotonin syndrome in a patient.
Bupropion	- Dopamine + norepinephrine reuptake inhibitor; has anti-depressant effects. - Also antagonizes nicotinic receptors, which disincentivizes smoking, since doing so won't produce rewarding effects.

	- Lowers seizure threshold. Don't give to patients with eating disorders (electrolyte abnormalities increase seizure risk). - Doesn't cause sexual side-effects, unlike SSRIs.
Mirtazapine	- α2-antagonist; stimulates appetite; used for patients with depression and anorexia.
Trazodone	- Serotonin antagonist and reuptake inhibitor (SARI). - Used for depression, but is frequently used for insomnia due to strong sedative effects. - Can cause serotonin syndrome.

Serotonin syndrome
- Flushing, tachycardia, diarrhea following drug-drug interactions (i.e., MAOI + SSRI; SSRI + St John wort) or high-risk drugs in isolation (e.g., MAOI, trazodone, lithium). Lithium sounds unusual, but on new 2CK NBME. - Can cause high fever, i.e., 105F+. - Diagnose with urinary 5-hydroxyindole acetic acid (5-HIAA). - Can be treated with cyproheptadine (blocks serotonin receptors). - Often confused with carcinoid syndrome, which is due to carcinoid tumors (serotonin-secreting tumors) of the lung, small bowel, or appendix. Carcinoid syndrome isn't due to drugs. Additionally, it can cause tricuspid vegetations, whereas serotonin syndrome does not. It is still diagnosed with urinary 5-HIAA.

Anti-psychotic meds
- Categorized as typical (antagonize D2 receptors) or atypical (antagonize mostly D2 receptors, but also have additional binding effects at other receptors such as D4 or serotonin). - HY Typicals: Haloperidol, Chlorpromazine, Prochlorperazine, Thioridazine. - HY Atypicals: **O**lanzapine, **C**lozapine, **Q**uetiapine, **R**isperidone, **A**ripiprazole, **Z**iprasidone – i.e., **O**ld **C**losets **Q**uietly Whisper (**R**isper) from **A** to **Z.** - All anti-psychotics can cause extra-pyramidal side-effects (EPS), anti-cholinergic side-effects, neuroleptic malignant syndrome (NMS), QT prolongation, and hyperprolactinemia (D2 agonism normally inhibits prolactin). I discuss side-effects in more detail below. - Typicals are older and more known for causing these effects. As a result, atypicals are usually the preferred first-line agents for schizophrenia and psychotic disorders. - Typicals like haloperidol are still occasionally used acutely for violent delirium, Tourette, or psychosis patients who have poor medication compliance. A 2CK form wants haloperidol decanoate as the answer for what's good to use for schizophrenia patient with poor compliance. - Prochlorperazine can be used as an anti-nausea medication despite being a typical anti-psychotic. - **Clozapine can cause neutropenia (agranulocytosis).** This is exceedingly HY. - Olanzapine and clozapine can worsen obesity. Aripiprazole or ziprasidone are better for high-BMI patients. - **C**hlorpromazine can cause **C**orneal deposits. **T**hioridazine can cause re**T**inal deposits.

Extrapyramidal side-effects
- The name for the movement disorders associated with anti-psychotic use.
- **"Rule of 4s"** → After a patient is started on an antipsychotic, a general trend is seen in terms of the onset of particular symptoms. The time frame is not strict/rigid; use it as a general trend – i.e., acute dystonia wouldn't just start at 4 months; tardive dyskinesia wouldn't occur as early as 2 weeks. - **Acute dystonia at 4 hours** → torticollis, oculogyric crisis, muscle rigidity **without** fever. - Torticollis = stiff / crooked neck. - Oculogyric crisis = weird eye movements (don't confuse with tongue movements of tardive dyskinesia). - Muscle rigidity **without** fever = acute dystonia. Muscle rigidity **with** fever = neuroleptic malignant syndrome. - Treat acute dystonia with **benztropine** or **trihexyphenidyl** (muscarinic receptor antagonists, which decrease muscle tone) or a 1st generation H1 blocker (**diphenhydramine** or **chlorpheniramine**). The

latter have nasty anti-cholinergic (anti-muscarinic) side-effects that are *actually what we want* when we're treating acute dystonia. Maybe 2/3 of acute dystonia Tx Qs will have benztropine as the answer; ~1/3 will have one of the 1st gen H1 blockers as correct.

- **Akathisia at 4 days** → restlessness.
  - Treat with propranolol (beta-blockade).
- **Parkinsonism at 4 weeks** → akinesia / bradykinesia.
  - Treat with amantadine.
- **Tardive dyskinesia at 4 months** → abnormal facial movements (notably tongue).
  - Risk is greater with typicals compared to atypicals, but TD can be seen in the latter on NBME.
  - Treatment is stop the typical and give an atypical.
  - Couple of weird Psych NBME Qs on this:
  - Patient on *atypical* + gets TD; Tx? → stop the atypical and give another atypical. (Just stop the drug and switch to yet another atypical.)
  - Patient on typical for 15 years and has no problems whatsoever (i.e., does not have TD); patient asks the psychiatrist what can be done to decrease his risk of developing TD; the correct answer is "stop the typical and give an atypical"; wrong answer is "maintain current drug regimen." Apparently even if the patient has been on a typical long term without an issue, switching to an atypical *still* confers a reduction of risk of TD.
- Metoclopramide (D2 antagonist used as anti-emetic / pro-kinetic) can also cause EPS side-effects and prolong QT interval, same as the anti-psychotics. There is 2CK Psych Q where they give Parkinsonism in patient on metoclopramide, and the next best step is "discontinue metoclopramide."

Neuroleptic malignant syndrome (NMS)

- Muscle rigidity and fever following commencement of anti-psychotic.
- The fever will usually be 103+ F, as per my observation on NBME exams. This is because mere anti-cholinergic side-effects can sometimes give low-grade fever (i.e., hot, red, dry patient).
- Mechanism for NMS is: the ryanodine channel, which allows calcium to move from the sarcoplasmic reticulum into the cytosol, gets stuck open, so ↑ calcium moves into the cytoplasm. The cell then needs to use a lot of ATP to pump the calcium back into the sarcoplasmic reticulum. This generates heat → fever.
- This mechanism for NSM secondary to anti-psychotic administration is the same as malignant hyperthermia (MH) due to succinylcholine (nicotinic neuromuscular blocking agent used during surgery).
- Tx is **dantrolene,** which closes the ryanodine channel.
- NBME will sometimes give vignette of NMS or MH, and then the answer for Tx is "decreases sarcoplasmic calcium release."
- In theory, bromocriptine (D2 agonist) can be used in the setting of NMS only as an alternative to dantrolene, but I haven't seen NBME assess this. This is more a pedantic Q students will ask sometimes.

Anti-cholinergic meds

Muscarinic receptor antagonists

Atropine	- Classic textbook drug that blocks muscarinic receptors. - Can be used to increase heart rate during surgery. - Given as 1st-line Tx for organophosphate poisoning before pralidoxime. - Pralidoxime is a special anti-cholinergic that works by regenerating functional acetylcholinesterase by kicking out the phosphate group that inhibited it.
Benztropine, trihexyphenidyl	- Used for acute dystonia due to anti-psychotics. - In other words, if patient starts anti-psychotic and then within hours to days gets stiff neck (torticollis), muscle rigidity (without fever), and/or abnormal eye movements (oculogyric crisis), this is 1st-line Tx. - Muscle rigidity with fever, in contrast, suggest neuroleptic malignant syndrome.
Diphenhydramine	- 1st generation H1-blocker that has strong anti-cholinergic side-effects to the point that it is often just characterized straight-up as a primary anti-cholinergic med. - Can be used same as benztropine for acute dystonia (USMLE won't list both).

	- Can be used for motion sickness (anti-cholinergic effects treat motion sickness). If USMLE tells you it is used in this setting + they ask you antagonism of which receptor enables its anti-motion sickness effect, the answer is M3. The wrong answer is H2, since this refers to stomach acid secretion. Diphenhydramine is an H1 blocker, not H2. - Most Qs on USMLE regarding diphenhydramine revolve around you knowing it should be discontinued from a patient's regimen, rather than added.
Prochlorperazine	- Anti-psychotic used as an anti-nausea med. - Even though it is an D2-receptor antagonist, as I mentioned before, anti-psychotics have anti-cholinergic side-effects. In this case, the anti-muscarinic side-effects are actually a "good" thing since these treat nausea and motion sickness.
Scopolamine	- Scopolamine patches are used for motion sickness (i.e., put it on the arm before getting on a boat or plane). This drug is an anti-cholinergic straight-up. - As mentioned above, oral diphenhydramine can also be used for motion sickness, but scopolamine is the classic treatment.
Hyoscyamine	- Used sometimes for irritable bowel syndrome.
Smoking cessation agents	
Bupropion	- As mentioned earlier, D + NE reuptake inhibitor; has anti-depressant effects. - Also antagonizes nicotinic receptors, which disincentivizes smoking, since doing so won't produce rewarding effects. - Lowers seizure threshold. Don't give to patients with eating disorders (electrolyte abnormalities increase seizure risk). - Doesn't cause sexual side-effects, unlike SSRIs.
Varenicline	- Used for smoking cessation. - Partial agonist at nicotinic receptors, but since this effect is less than endogenous ACh, it functions like an antagonist.

Epilepsy/hypnotic agents	
- USMLE doesn't care about MOAs for these. They care about side-effects mostly, as per my observation.	
Valproic acid	- Blocks sodium channels and ↑ GABA. - Used as an alternative to lithium in Tx of bipolar disorder. - Causes neural tube defects in pregnancy due to interference with folate metabolism.
Carbamazepine	- Blocks sodium channels. - Generic anti-epileptic. - Causes neural tube defects in pregnancy due to interference with folate metabolism. - Can cause aplastic anemia and SIADH.
Phenytoin	- Blocks sodium channels. - Generic anti-epileptic. - Causes neural tube defects in pregnancy due to interference with folate metabolism. - Can cause fetal hydrantoin syndrome (finger nail hypoplasia + abnormal facies). - Used for status epilepticus if benzo fails.
Ethosuximide	- Blocks thalamic calcium channels. Only anti-epileptic USMLE might ask MOA. - Used for absence seizures.
Benzodiazepines	- Diazepam, lorazepam, midazolam, chlordiazepoxide, etc. - Bind to GABA-A receptor, which ↑ frequency of Cl^- channel opening, thereby allowing Cl^- to flow into the neuron, hyperpolarizing it and inhibiting it (i.e., ↓ firing). - Hypnotic (induces sleep); anxiolytic (reduces anxiety); anti-convulsant. - Given 1st-line for status epilepticus. - Clonazepam used for insomnia/anxiety (shows up on NBME). - Used for stimulant intoxication (i.e., cocaine, amphetamine, PCP). - Used for specific phobia (e.g., fear of flying). - Used for social phobia 2nd-line if patient has asthma, since we don't give propranolol in this setting (asked on NBME). - Used for alcohol withdrawal (delirium tremens / alcoholic hallucinosis).

	- USMLE wants you to know that alcohol also binds to and activates GABA-A receptor, but at a different location from benzos. There's an NBME Q where you have to select the illustration of an alcohol molecule and benzo binding to the same receptor, but at different sites. - Can cause respiratory depression. - Treat overdose with flumazenil (antagonist of benzo receptor).
Barbiturates	- Phenobarbital, thiopental, etc. - Bind to GABA-A receptor; ↑ duration of chloride channel opening, making them more efficacious (and dangerous) than benzos. - Used for general anesthesia. - Used for unremitting status epilepticus if benzos and phenytoin fail.
Non-benzo hypnotics	- Zolpidem, zaleplon. - Activate GABA-A receptor, but bind to a different subunit from benzos. - Can cause addiction similar to benzos.
Magnesium	- Used for Tx and prevention of eclamptic seizures in pregnancy. - Given to pregnant women giving birth <32 weeks' gestation for neuroprotection for the fetus. - Used for torsades arrhythmia and digoxin toxicity.
Lamotrigine	- Blocks sodium channels. - General anti-epileptic. - Can cause Stevens-Johnson syndrome.

Parkinson drugs	
Carbidopa-levodopa	- Combo frequently used for Tx of Parkinson disease. - Levodopa crosses the BBB to be converted to dopamine centrally. However, levodopa is subject to fast metabolism when administered alone. The addition of carbidopa functions as a competitive inhibitor of breakdown enzymes, resulting in increased levodopa availability for passage across the BBB. Do not confuse this mechanism with direct COMT inhibitors (tolcapone, entacapone), which prevent breakdown of L-dopa. - Carbidopa-levodopa can cause psychosis if administered in too-high a dose. This is assessed on 2CK Psych forms, where if patient gets psychotic episodes following recent addition of C-L to regimen, or following an increase in dose, the answer is simply "decrease dose of carbidopa-levodopa." "Discontinue carbidopa-levodopa is the wrong answer."
D2 receptor agonists	- Ropinirole, pramipexole, cabergoline, pergolide, and bromocriptine. - Used for Parkinson disease management. - Bromocriptine classic agent used for prolactinoma (dopamine agonism ↓ prolactin). - Ropinirole + pramipexole classically show up as restless leg syndrome treatment following making sure the patient is iron replete. New literature suggests gabapentin is first-line over D2 agonists now for RLS, but USMLE won't play trivia. They will give patient with RLS + say, "In addition to ropinirole, what else could be added?" And gabapentin will be the only answer listed that works.
Amantadine	- Used for Parkinson disease. - Increases presynaptic release of dopamine.
Selegiline	- Used for Parkinson disease. - Inhibits monoamine oxidase B, which is an enzyme that preferentially breaks down dopamine. - Can cause serotonin syndrome, either alone, or in combo with drugs like St John Wort or SSRIs.

Alzheimer drugs	
Donepezil	- As mentioned earlier, this is a cholinesterase inhibitor used in Alzheimer. - Rivastigmine and galantamine you can be aware of and have same MOA, but are LY.
Memantine	- NMDA glutamate receptor antagonist. - Glutamate receptor activation normally causes Ca^{2+} to flow into the neuron, leading to depolarization and neuroexcitation. In other words, USMLE wants you to know glutamate receptor is a ligand-gated calcium channel (where glutamate is the ligand that activates the channel). Antagonism causes neuroinhibition.

Headache drugs	
Migraine	- Abortive therapy: NSAIDs first, then sumatriptan (serotonin receptor agonist). - Prevention: propranolol (beta-blockade).
Cluster	- Abortive therapy: oxygen. - Prevention: verapamil (non-dihydropyridine calcium channel blocker).
Tension	- Rest + acetaminophen.
Trigeminal neuralgia	- Abortive: goes away on its own because episodes last maximum 30-60 seconds. - Prevention: carbamazepine (sodium channel blocker).

Opioids for USMLE	
- Mu (μ) and kappa (κ) are most well-studied, although delta (δ) and NOP forms exist. - Mu agonism is responsible for most of the classic effects of opioids – i.e., analgesia, euphoria, respiratory depression, and dependence. Agonism results in inhibition of neuronal firing and neurotransmitter release via opening of K^+ channels and closing of Ca^{2+} channels. - Kappa has analgesic effects but can also produce dysphoria. - Opioids can cause respiratory depression, miosis, and constipation. - Opioid withdrawal can cause flu-like symptoms, irritability, piloerection, and yawning.	
Opioid receptor agonists	
Morphine	- Gold standard opioid; used for moderate to severe pain. - USMLE wants you to know that morphine is "metabolized into active metabolites that accumulate." This is NBME answer for how overdose can occur in patients who use self-controlled pumps, since it can take time to work, so patient uses too much. - Patients who are in severe pain can sometimes have hypertension as a result. Surgery Q has morphine as answer for how to control BP post-op. - If patient has history of opioid abuse but has severe pain, e.g., due to trauma, do not withhold using opioids. Always treat pain fully.
Codeine	- Less potent than morphine; used for mild to moderate pain; in many antitussives.
Oxycodone	- Potent opioid often combined with acetaminophen. - USMLE wants you to know that oxycodone/acetaminophen combo is preferred initially in patients who are post-op. Do not just jump to morphine.
Fentanyl	- Potent synthetic opioid with high abuse potential.
Meperidine	- Potent opioid with high abuse potential. - I've noticed NBME likes this opioid for malingering Qs, where they'll say, e.g., a 47-year-old man comes into the ER in severe pain requesting meperidine.
Dextromethorphan	- Opioid used in antitussives. - Common cause of delirium from over-the-counter cold meds.
Loperamide, eluxadoline	- Opioids used for diarrhea-predominant irritable bowel syndrome. - Low addictive potential. - The fact that opioids cause constipation as an adverse effect "is a good thing" in the setting of wanting to help limit diarrhea in IBS.
Buprenorphine	- Mu partial agonist and kappa antagonist. - The kappa antagonism can help cause less dysphoria.

	- NBME Q floating around somewhere wants you to know it has the kappa effects.
Tramadol	- Unique MOA where it is weak mu opioid agonist + also an SNRI.
Methadone	- Long-acting full mu opioid agonist that is used for opioid/heroin withdrawal. - Reduces opioid cravings.
Opioid receptor antagonists	
Naloxone	- Opioid receptor antagonist used for acute overdoses.
Naltrexone	- Opioid receptor antagonist used for alcohol dependence (i.e., ↓ alcohol cravings). - Can also be used for opioid dependence in patients who are already detoxified in order to prevent relapse (i.e., by blocking opioid receptors, if the patient abuses any opioids, he/she won't feel the euphoric effects).
Suboxone	- Buprenorphine + naloxone combo given orally for opioid addiction in those who have high risk of abuse, or those who have already abused methadone. - Buprenorphine's partial agonist effects at mu receptors help with cravings, but the naloxone is added so that if the patient crushes the suboxone and injects it, the naloxone will antagonize the opioid receptors and cause withdrawal symptoms. However, when taken orally, the naloxone has negligible effect due to poor oral bioavailability.

Alcohol abuse drugs	
Disulfiram	- Blocks acetaldehyde dehydrogenase. - If patient drinks while on the drug, he/she will experience flushing + severe discomfort, thereby disincentivizing any form of drinking.
Acamprosate	- Alcohol inhibits NMDA glutamate receptor activity, where chronic alcoholism causes upregulation of NMDA receptors and excessive glutamate transmission and excitotoxicity upon withdrawal. - Acamprosate decreases alcohol withdrawal cravings by modulating glutamatergic activity.
Naltrexone	- As mentioned above, opioid receptor antagonist that ↓ alcohol cravings.

- 12M + sore throat + new-onset tic; Dx? → PANDAS (Pediatric Autoimmune Neuropsychiatric Disorder Associated with Streptococcus); Group A Strep infection can lead to tic, ADHD, OCD; question on student's USMLE asked for "anti-streptolysin O titer" as the answer to help assess etiology in kid with a tic starting after a sore throat.
- 7F + facial grimaces past 5 months + no other motor findings or abnormal sounds + mental status normal; next best step in Mx? → answer = "schedule a follow-up examination in 3 months" → Dx = provisional tic disorder → 1/5 children experience some form of tic disorder; most common ages 7-12; usually lasts less than a year; "watch and wait" approach recommended. Provisional tic disorder used to be called transient tic disorder; the name was changed because a small % go on to develop chronic tics.
- 65M + given IV methylprednisolone for temporal arteritis + develops confusion + visual hallucinations; Dx? → answer = "corticosteroid-induced psychotic disorder"; astute student says, "I thought that

happens with high doses over longer periods of time." → response: yeah, but Psych NBME has it occurring after a one-off dose in a patient. Bottom line is: be aware that glucocorticoid psychosis is tested.

- 8M + 1-year Hx of eye-blinking + facial grimacing + throat-clearing; most appropriate pharmacologic therapy? → Psych shelf answer = risperidone; can Tx with antipsychotics, alpha-2 agonists (clonidine), CBT.
- 82M + confusion + on various meds; Dx? → various answers on NBME are: "discontinuation of anticholinergic medications"; "discontinuation of diphenhydramine" (1st gen H1 blocker); "discontinuation of amitriptyline"; "discontinuation of doxepin"; "discontinuation of desipramine" (all TCAs) → TCAs, 1st generation H1 blockers, and 2nd generation antipsychotics (atypicals) all cause a triad of side-effects:
    - Anti-cholinergic (anti-muscarinic)
    - Anti-alpha-1-adrenergic
    - Anti-H1-histaminergic
- "What do you mean by anticholinergic effects of meds?" → Start with knowing that DUMBBELSS is a mnemonic for *cholinergic* effects: Diarrhea, Urination, Miosis (pupillary constriction), Bradycardia, Bronchoconstriction, Excitation (neuromuscular), Lacrimation, Salivation, Sweating → so by anti-cholinergic effects, it's just the opposite of DUMBBELSS: constipation, urinary retention, mydriasis, tachycardia, *bronchodilation not seen* (M3 agonism can bronchoconstrict, but dilation is sympathetic beta-2-regulated), *Flaccidity not seen*, xerophthalmia (dry eye), xerostomia (dry mouth), anhidrosis.
- "What do you mean by anti-alpha-1-adrenergic?" → alpha-1 normally constricts peripheral arterioles → anti-alpha-1 effects can precipitate orthostatic hypotension + fainting.
- "What do you mean by anti-H1-histaminergic effects?" → sedation.
- 8M + develops visual hallucinations after starting on over-the-counter cold med provided by his mother; Dx? → anticholinergic delirium caused by diphenhydramine or dextromethorphan (anti-tussive opioid).
- 82M + urinary hesitancy + interrupted stream + taking amitriptyline; next best step? → discontinue amitriptyline.

- 25M + started on new psych med + is now hot and dry; Dx? → anticholinergic effects of TCA.
- 35F + family member Dx with breast cancer + says she can't sleep; Q asks which med to give → answer on Psych NBME = clonazepam → benzo OK for acute Tx of insomnia; never prescribe chronically.
- 35M + recently divorced + stressed + insomnia; which med to give: answers are SSRI, antipsychotic, and zolpidem; answer = zolpidem → non-benzo zolpidem may be used short-term for insomnia. Take home point is be aware both benzo + non-benzo can be used acutely for insomnia.
- 52F + 8-week Hx of progressive confusion and memory loss + myoclonus; Dx? → Creutzfeldt-Jakob syndrome (prion disease).
- 65M + visual hallucinations + bradykinesia + gradual cognitive decline; Dx? → Lewy body dementia.
- 65M + pulls his pants down when guests come over to the house + apathy; Dx? → frontotemporal dementia (Pick disease) → characterized by apathy, disinhibition, personality change.
- 65M + Parkinsonism + axial dystonia; Dx? → answer = progressive supranuclear palsy (student had this on the USMLE).
- 65M + wet, wobbly, wacky + Parkinsonism; Dx? → normal pressure hydrocephalus (NPH) → urinary incontinence, ataxia, cognitive dysfunction; **key point to make here is the Parkinsonism.** Wiki it yourself, you'll see.
- Mechanism for incontinence in NPH? → answer = "failure to inhibit the voiding reflex."
- Area of the brain affected in Huntington? → answer on shelf = caudate nucleus.
- 22M + hyperoralism + hyperphagia + docility; Dx? → Kluver-Bucy syndrome → bilateral amygdala lesions.
- Cause of Kluver-Bucy syndrome? → most often due to HSV encephalitis.
- 49M + Down syndrome + forgetfulness; which part of brain is affected? → answer = nucleus basalis of Maynert → high-density of cholinergic neurons (basal forebrain) → affected in Alzheimer (early-onset in Down).
- Where in the brain is there high amount of norepinephrine production? → locus coeruleus (pons).
- Where in the brain are there high amounts of serotonergic neurons? → raphe nucleus (medial reticular formation).

- Pharm Tx for Alzheimer? → acetylcholinesterase inhibitors first (donepezil, galantamine, rivastigmine); sometimes Q will ask for mechanism, and answer = "cholinergic"; for more advanced disease try NMDA (glutamate) receptor antagonist (memantine).
- 74M + MMSE 22/30 + avoids eye contact + weight loss + low mood; DX and Tx? → pseudodementia → Tx = sertraline (SSRI), not donepezil.
- Main way to differentiate pseudodementia from dementia? → pseudodementia is depression that presents as cognitive decline; vignette may describe weight loss *or gain*, avoidance of eye contact, low mood, and/or tearing up during interview; vignette may also mention poor performance on the reverse serial 7s of the MMSE, or the patient is slow drawing a clockface but can rapidly complete it once prompted (apathy); pseudodementia presents as ***apathy*** on MMSE; in contrast, patients with true dementia ***try*** on the MMSE.
- How to differentiate normal aging from Alzheimer on Psych shelf? → biggest point is that **patients who complain or are concerned about their own cognitive decline** do not have Alzheimer; classic example is 68F who frequently says she walks into rooms and can't remember why she went in there + says she accidentally left the burner on in the kitchen last week and had an argument with her adult daughter about it → answer = normal aging, not dementia → patient *herself* is concerned / complaining, so answer is not dementia on USMLE.
- Other notable causes of reversible cognitive decline? → **hypothyroidism, B12 deficiency,** neurosyphilis, neuro Lyme.
- 53M + BMI 25 + mostly quiet during interview + total cholesterol 300 mg/dL + hepatic AST slightly elevated + HR 60; Dx + next best step in Mx + Tx? → hypothyroidism → check serum TSH → give levothyroxine (T4); hypothyroidism can cause dysthymia, high cholesterol, and elevated hepatic transaminases.
- 48F + BMI 26 + cholesterol elevated + HR 55 + creatine kinase (CK) elevated; Dx? → hypothyroidism → check serum TSH; hypothyroid myopathy can cause proximal muscle weakness + elevated serum CK.
- 81F + cooks own meals since husband passed away + seems depressed + various non-acute neurologic findings; next best step? → assess suicide risk (this answer is basically always correct if it's listed).

- 81F + memory decline; next best step after assessing suicide risk? → Mini-Mental State Exam (MMSE).
- 81F + cooks own meals since husband passed away + seems depressed + various non-acute neurologic findings + MMSE is 25/30 + no suicidal ideation; next best step? → check serum B12 → subacute combined degeneration (SCD) = pattern of neurologic dysfunction seen in B12 deficiency.
- Which three spinal tracts are involved in SCD? → lateral corticospinal, spinocerebellar, dorsal columns → just remember that the spinothalamic is not involved.
- 68M + started on various medications 8 weeks ago for low ejection fraction heart failure + now has depressed mood; most likely cause? → **depression caused by beta-blocker.**
- Nocturnal enuresis; when is it pathologic? → after age 5.
- 6M + nocturnal enuresis; next best step? USMLE / NBME / shelf wants the following order:
    - Behavioral answer first; e.g., spend more time with child; decrease overt stressors as much as possible.
    - If the above not an answer, do **star chart** (positive reinforcement therapy; i.e., don't wet the bed and get a star; get 5 stars for extra dessert; 100 and we go to Disneyland).
    - If star chart not listed or already attempted, next answer is **enuresis alarm.**
    - Medications like imipramine and desmopressin are always wrong; water deprivation after 5pm is also always wrong..
- Students mess these Qs up because they'll see enuresis alarm as correct on one form, but on a different form it's star chart, so know the above order.
- Patient wants to commit suicide; next best step? → admit to hospital involuntarily.
- Acutely suicidal patient + you need to admit him/her; what do you say? → "how would you feel about entering hospital?"
- 10M + family comes from rural Asian town + family says child episodes in which he is "possessed" and has episodes of spitting up blood + parents seem well-supportive; next best step in Dx? → EEG is correct; the wrong answer is contacting child protective services; tongue or cheek biting during a seizure can lead to post-ictal blood in saliva; students hate this type of question, but Psych shelf asks Qs assessing sensitivity to cultural beliefs.

- 33M + robbed at gunpoint two days ago + now is mute and not responding to questions; Tx? → answer = benzo (lorazepam) → catatonia secondary to adverse stimulus.
- 39F + >6-month Hx of multiple worries (i.e., career, marriage, kids going to college, etc.) + no overt mood or psychotic Sx; Dx? → generalized anxiety disorder (GAD) → Dx is >6 months of general worries without lack of specific stressor.
- Tx of GAD? → cognitive behavioral therapy (CBT) and/or SSRI; second-line pharm agent is buspirone, which is a serotonin receptor agonist; USMLE wants you to know buspirone + its mechanism, but also remember that it's not first-line for GAD; SSRIs are.
- 22F + not performing well in classes since breaking up with boyfriend 3 months ago; sleeps well; no weight loss; has low mood; Dx? → adjustment disorder → Dx is socio-occupational dysfunction (school, work, social life) secondary to specific stressor, but patient must *not* have mood or psychotic disorder, otherwise Dx is, e.g., major depressive disorder (MDD), or bipolar, etc. Some Psych shelf questions will have as answers, e.g., "Adjustment disorder with depressed mood," or "Adjustment disorder with anxious mood," but in these vignettes the patient won't have actual MDD or a true psychotic disorder.
- 82F + MDD + refuses to eat + catatonia; next best step? → answer on Psych shelf = electroconvulsive therapy (ECT); some ECT indications are: catatonia, pregnancy, refusal to eat or drink, imminently suicidal, treatment resistance, Hx of ECT response, psychotic features present.
- 33M + ingested substance + high RR + now has calcium oxalate urolithiasis; Dx? → ethylene glycol toxicity → causes calcium oxalate nephrolithiasis; high RR is due to respiratory compensation for high-anion gap metabolic acidosis (MUDPILES).
- 16M + found on floor in school bathroom + brought into hospital + sluggish + pupils and vitals normal; which drug/substance did he do? → answer = **butane (inhalant toxicity); this is HY!**
- 14M + cognitive decline over a few months + ataxia; which drug/substance did he do? → answer = **glue**, not alcohol → 14 is too young to get alcohol-induced cerebellar ataxia.
- 22M takes a drug + gets nystagmus + bellicosity (wants to fight) → **answer = PCP.**
- 22M takes a drug + gets mutism + has constricted pupils → answer = PCP. Fucking weird but it's on the psych NBME for 2CK. If you don't believe me, you can Google "pcp mutism constricted pupils."

- 22M + sluggish patient + has angiogram performed (for some reason) that shows decreased cerebral blood flow; drug that was taken? → answer = cocaine; this question is on USMLE. Cocaine is known to cause vasoconstriction, i.e., placental abruption, coronary vasospasm; apparently that extends to cerebral blood flow on the exam.
- 16F + injected conjunctivae + has paranoia; Dx + Tx? → marijuana intoxication; observation.
- Tx for OCD on shelf? → answer = SSRI (i.e., sertraline).
- 23M + hearing voices for 6 weeks + staying up all night for 4 weeks; Dx? → answer = schizoaffective disorder → Dx is >2 weeks of psychotic disorder in the absence of mood disorder.
- 23M + vignette sounds like he has schizophrenia + no mention of mood disorder + answer is schizoaffective; why? → this is snapshot of the patient in the psychosis-only phase of schizoaffective (asked on Psych shelf, where you need to eliminate the other answers, e.g., bipolar, cyclothymia, etc., in order to answer correctly).
- What are the important timeframes for schizophrenia vs schizophreniform vs brief psychotic disorder? → brief psychotic disorder is < 1 month; schizophreniform is 1-6 months; schizophrenia is >6 months of psychosis.
- If brain imaging performed in schizophrenic patient, what would be seen? → answer = enlargement of the third and lateral ventricles.
- Major characteristic in psych vignettes that suggests psychotic disorder? → **auditory** hallucinations; in contrast, visual hallucinations are non-specific and seen frequently in drug use (alcohol, amphetamines, marijuana, etc.).
- Criteria for MDD: SIGECAPS (at least 5 of 9): Sleep disturbance, Interest (loss of), Guilt, Energy (loss of), Concentration (loss of), Appetite (change in), Psychomotor disturbance (e.g., headaches), Suicidal ideation. Bear in mind USMLE vignettes will often *not* give you 5 out of 9 SIGECAPS in all questions; sometimes the vignette will be as simple as mentioning weight loss/gain in elderly patient who's teary-eyed.
- What is bipolar I vs II? → bipolar I is worse than II; both will have cycling episodes of mania and depression, but bipolar I will often tell you there's Hx of hospitalization, or losing one's job, friends, or

relationships (socio-occupational dysfunction), or spending lots of money; bipolar II will tell you patient keeps stable job and/or family life and has never been hospitalized.

- Tx for bipolar? → **lithium** or valproic acid to start.
- Adverse effects of lithium and valproic acid? → lithium causes Ebstein anomaly in pregnancy (atrialization of right ventricle in fetus); also tremor and thyroid dysfunction; valproic acid notoriously causes neural tube defects.
- What is cyclothymia vs dysthymia? → cyclothymia is >2 years of swinging low + elevated moods, but never meets the thresholds for bipolar + never has true depressive episode. Dysthymia is >2 years of low moods not ever meeting thresholds for MDD.
- When is delusional disorder the answer? → one, fixed, non-bizarre delusion + no other mood or psychotic Sx; presentation will often be patient with mistrust + suspects coworkers and neighbors are attempting to undermine her work or are stealing from her. If the vignette says anything about "aliens," "the heavens," "the lord," etc., the delusion is bizarre and the Dx is psychosis (i.e., schizophrenia), not delusional disorder.
- 59F + metastatic cancer + in pain + crying + "wants to die"; Q asks most likely reason for wanting to die; answer = "inadequate pain control"; "major depression" is wrong answer; must address pain management in cancer patients.
- 35F + chronic pain in arm since MVA last year + says to physician "I'm realizing I'll be like this forever." Question wants most appropriate response; answer = "have you been feeling like just giving up?" → must assess suicide risk.
- 42F + 3-month Hx of insomnia + discomfort while lying in bed; next best step in management? → check serum iron and ferritin levels; student says wtf? → restless leg syndrome is most often caused by iron deficiency.
- 42F + 3-month Hx of insomnia + discomfort while lying in bed + serum iron and ferritin are normal; next best step in management? → D2 agonist – i.e., pramipexole or ropinirole, etc.
- Patient with restless leg syndrome is at increased risk for what disease later in life? → answer on USMLE = Parkinson disease (if D2 agonist can Tx, then lack of dopamine transmission may be etiology in some patients).

- 58M + loses consciousness while shaving + tilt-table test shows **no abnormalities**; Dx? → NBME wants "carotid sinus hypersensitivity" as answer. If tilt-table test (+), answer = vasovagal syncope.
- 45F + fundoscopy shows hard exudates + cotton wool spots + scattered hemorrhages; Dx? → diabetic retinopathy.
- Medication that can cause tardive dyskinesia that is not an antipsychotic? → answer = metoclopramide (D2 antagonist); can also prolong QT interval and cause hyperprolactinemia.
- Anti-depressant med causing seizures? → bupropion.
- Other HY factoids about bupropion: also used for smoking cessation; never give in electrolyte disturbance or eating disorder patients because of seizure risk; does not cause sexual dysfunction (unlike SSRIs which can cause anorgasmia); bupropion is a reuptake inhibitor preferentially for NE and dopamine over serotonin.
- 18M + enters emergency department; which blood parameter would indicate recent alcohol intoxication? → elevation of serum GGT.
- Frontal lobe injury in car accident; NBME asks which deficit is most likely to ensue; answer = conceptual planning.
- 56M + 3-day Hx of cutting from 12 beers a day down to 4; develops tremulousness; Tx? → chlordiazepoxide (delirium tremens); classic vignette is guy has surgery + two days later has tachycardia, tremulousness, and hallucinations (alcoholic hallucinosis).
- 32M + fear of flying; Dx + Tx? → specific phobia; Tx with benzo.
- 32M + fear of public speaking (glossophobia); Dx + Tx? → social phobia, not specific phobia; Tx = atenolol (propranolol also OK).
- 25F + fear of flying + must fly soon; Tx? → lorazepam → specific phobia.
- Psych NBME form has both vignettes, practically identical, with the same answer choices:
    - 27M + asthma + very anxious about speech he needs to make soon; Tx? → **Psych NBME wants lorazepam, not propranolol** (because asthma patient).
    - 27M + very anxious about speech he needs to make soon; Tx? → **Psych NBME wants propranolol, not lorazepam.**

- 56M + alcoholism + acutely intoxicated + B1 is administered; the latter decreases what most significantly? → Neuro shelf wants "anterograde amnesia" as the answer; mnemonic for Wernicke = A COW → Ataxia, Confusion, Ophthalmoplegia, Wernicke.
- Antipsychotic medication started + muscle rigidity + no fever; Dx + Tx? → acute dystonia, not neuroleptic malignant syndrome (because no fever); Tx with benztropine (muscarinic receptor antagonist) or diphenhydramine (1st gen H1 blocker, which has strong anti-muscarinic side-effects).
- Antipsychotic medication started + abnormal eye movements + stiff neck; Dx? → acute dystonia (oculogyric crisis + torticollis).
- Antipsychotic medication started + muscle rigidity + fever; Dx + Tx? → neuroleptic malignant syndrome; give dantrolene (inhibits ryanodine channel).
- Antipsychotic med + restlessness; Dx + Tx? → akathisia; Tx with propranolol. Psych shelf has Q where patient says: "I feel as though I am going to jump out of my skin!" → answer = "adverse effect of prochlorperazine."
- Antipsychotic med + bradykinesia; Dx + Tx? → drug-induced Parkinsonism; Tx with amantadine or propranolol.
- Antipsychotic med + abnormal tongue movements; Dx + Tx? → tardive dyskinesia; stop antipsychotic + switch to atypical → answer on Psych shelf for one Q is "discontinue haloperidol and switch to risperidone."
- Mechanism for tardive dyskinesia? → answer on Psych NBME = "increased sensitivity of dopamine receptors."
- 8-month-old boy + 3rd-centile for weight + slanted palpebral fissures + epicanthal folds + single palmar crease + thin upper lip with a "fish mouth" appearance + indistinct nasal philtrum; Dx? → answer on Psych NBME = **fetal alcohol syndrome (FAS), not Down syndrome;** everyone says wtf about this question, so what I tell my students is: if Q sounds like Down syndrome but they mention anything about the philtrum (i.e., long, smooth, indistinct, etc.), the answer is FAS, not Down.
- 6M + IQ of 60 + small for age + born to female age 41 + no other information given; Q asks: most likely cause of mental retardation? → answer = Down syndrome, not FAS; although FAS is most common cause of MR overall, two points: 1) if they want FAS, they'll mention the philtrum as per above, and 2) most common cause of MR *over the age of 40* is Down, not FAS.

- 8M + prominent jaw + protruding ears + IQ of 65; most likely explanation? → "Fragile site on the X chromosome" → Fragile X (CGG TNR disorder).
- 7M + prominent ears + flattened nasal bridge + long philtrum + low IQ; Dx? → FAS, not Fragile X; the Q mentions the philtrum.
- 4F + wringing of the hands + putting objects in her mouth + less eye contact; Dx? → answer = Rett syndrome; only seen in girls; hyperoralism may reflect cognitive regression (babies put everything in their mouths).
- 5M + talks to imaginary friends; Dx? → age-appropriate behavior.
- 7F + preoccupation with death + fear of dying + constantly asking parents about dying; Dx? → age-appropriate behavior. Weird, but the NBME will do what it wants.
- 40F + headaches + abdo pain + mild weight loss + fatigue + 5/9 SIGECAPS *not* met + no mention of low mood; Dx? → NBME wants **somatization disorder, not MDD;** this Q is a little challenging, as mere weight loss/gain + low mood will often be MDD, particularly in elderly; somatization disorder Dx is recurring, multiple, current somatic complaints; Tx = CBT.
- 59M + wife says he has bizarre behavior at night where he jumps out of bed and runs back and forth across the room punching the air + says he does not recall such behavior but remembers bad dreams; Dx? → answer = REM sleep behavior disorder → incomplete or absent REM muscle atonia; tends to occur in older adult men; if recurrent, may indicate onset of neurodegenerative disorder like Parkinson disease.
- 8M + gets out of bed at night and tries to leave the house; when his mom tries to stop him, he violently tries to pull away from her; once he got out of the house and woke up outside while in the middle of an episode; he has no recollection of the episodes; Dx? → sleep terror disorder; tends to occur in pre-adolescent boys.
- 23M + used synthetic heroin + diffuse stiffness + drooling; Dx? → MPTP-induced Parkinsonian syndrome → affects substantia nigra; MPTP-containing powder is sometimes sold as "synthetic heroin."
- 29M + temperature of 107.7F + Hx of MDD + normal HR, RR, BP + WBCs; next best step in Mx? → Psych shelf wants "obtain rectal temperature under supervision"; **fraudulent temperature / factitious**

fever is a type of factitious disorder (patient seeks primary gain – i.e., medical attention; willing to undergo invasive procedures); rectal temperature is most accurate way to measure temperature.

- 42M prisoner + can't feel his foot + pulses and reflexes normal; Dx + Tx? → malingering (secondary gain – i.e., money, drugs, time away from prison; *not* willing to undergo invasive procedures) → "no treatment indicated."
- Serum abnormalities seen in bulimic patient? → **increased serum amylase +** hypokalemic, hypochloremic metabolic alkalosis.
- 18F + repeated purging + BMI 17; Dx? → anorexia, not bulimia → if BMI low, answer is anorexia.
- 18F + anorexia; what electrolyte disturbance is most likely? → hypokalemia.
- 18F + anorexia + BMI of 14 + reintroduced to foods; what electrolyte must we notably look out for? → hypophosphatemia (refeeding syndrome).
- 26M + lost in the woods for three weeks + BMI 27 + reintroduced to foods; what electrolyte must we notably look out for? → hypophosphatemia (refeeding syndrome).
- Amenorrhea in patient with anorexia; why? → decreased GnRH pulsation → decreased LH + FSH; Q wants "↓ FHS, ↓ estrogen" as the answer; in contrast, premature ovarian failure, Turner syndrome, and menopause have "↑ FHS, ↓ estrogen" as the answer.
- Anorexia in patient with edema; mechanism for edema? → answer = decreased serum albumin (yes, this is straight from the Psych NBME, no idea why).
- 45M + has repeated thoughts of harming his son + finds the thoughts absolutely outrageous and disturbing + says he would never do such a thing; Dx + Tx? → obsessive-compulsive disorder (OCD) → obsessions are the thoughts; compulsions are the actions; OCD can be just obsessions without actions; Tx is CBT and/or SSRI.
- 33M + witnessed construction accident at work where many people were injured + found by police in bowling alley parking lot talking to himself + unable to respond to questions about his identity; Dx? → answer = dissociative fugue (dissociative disorder); fugue = amnesia for personal identity + travel.
- 16F + has mid-systolic click + episode of hyperventilation and chest pain and sense of impending doom; Dx → panic attack = acute episode; recurrent episodes = panic disorder. Psych shelf will often try to make vignette sound cardiac; sometimes "mitral valve prolapse" will be listed as a wrong

answer; student will say, “but there’s a mid-systolic click,” which is true, but the answer is still panic attack/disorder; MVP is most common murmur in population + almost always benign finding.

- Tx of panic attack vs panic disorder? → benzo on USMLE. For panic disorder, Tx = SSRI.
- Fainting in panic disorder; why? → answer = “decreased cerebral perfusion,” or “cerebral hypoperfusion”; hyperventilation → decreased CO2 → causes decreased cerebral blood flow.
- 56M + depressed mood + sleep apnea; Dx? → answer = mood disorder due to a general medical condition.
- 22F + hyperphagia + hypersomnolence + improved mood with pleasurable events; Dx + Tx? → atypical depression; Tx = SSRI, not MAOi; MAOi (e.g., phenelzine) are considered highly efficacious but carry dangerous side-effects, so SSRIs remain first-line.
- Patient eats aged cheese + red wine + slice of pepperoni pizza (fuck now I want pizza) + takes phenelzine for atypical depression + gets BP of 220/100; Dx + Tx? → answer = tyramine crisis; MAOi prevent the breakdown of tyramine, a naturally occurring catecholamine in some foods; tyramine prevents the reuptake of endogenous catecholamines; Tx for tyramine crisis on Psych shelf = alpha-1 blocker (phentolamine).
- 22M + schizophrenia + poor adherence to medications; best med to give to Tx? → haloperidol decanoate.
- 26F in Australia picking peaches + pinpoint pupils; Q is “how could this have been prevented?” → answer = “wearing gloves,” **not** “use of facemask.” Apparently organophosphate poisoning is acquired through skin, not droplets.
- Tx for organophosphate poisoning? → answer = atropine *before* pralidoxime. Retired NBME 15 or 16 for Step 1 has both as answers, and atropine is correct.
- 57M + trouble with intercourse with his wife + has nocturnal erections; Dx? → secondary erectile dysfunction (psychological) → if nocturnal tumescence is intact, he’s physiologically fine.
- 57M + recently divorced + now sleeping with new women + cannot ejaculate during sex + achieves erection during sex with no problem; Dx? → performance anxiety.
- Tx for premature ejaculation? → answer = SSRI.
- 44M + comes in dressed all in yellow + high energy; Dx? → histrionic personality disorder.
- 44F + sexual toward doctor + high energy; Dx? → histrionic personality disorder

- 16F + slice marks on wrists and thighs + Hx of two prior broken engagements; Dx + Tx? → borderline personality disorder; parasuicidal behavior common (suicidal gestures, but not true attempts at suicide); Tx = dialectal behavioral therapy (DBT).
- Defense mechanism in borderline personality disorder? → splitting: "all doctors are bad; all nurses are good."
- 26M + works at plastics factory + quiet/loner; Dx? → schizoid personality disorder (ego-syntonic).
- 47F + highly sensitive to rejection + poor self-esteem; Dx? → avoidant personality disorder (ego-dystonic).
- 26M + "wild thinking" + no auditory hallucinations; Dx? → schizotypal personality disorder.
- 8M + causes frequent disruption at school *and* at home; Dx? → ADHD; Tx = methylphenidate.
- 16M + disruptive in class + numerous suspensions from school + caught stealing at the mall; Dx? → conduct disorder → *pattern of* ***law-breaking*** + must be under age 18; in contrast, a patient with oppositional defiant disorder ***does not*** break the law.
- 27M + cheated on the Bar Exam + fired from job at 23 for stealing + arrested for drunk driving in high school; Dx? → antisocial personality disorder; key detail is: *must break the law*; must be older than age 18 *and* must have had conduct disorder prior to age 15 → in other words, just because an adult breaks the law does not mean he or she has ASPD. Another important point is that "anti-social" means "law-breaking," not "not social." Students tend to erroneously define anti-social as avoidant.
- 60M + recovering from a recent MI; he is at high risk of which of the following? → MDD → common following major adverse events (e.g., trauma, serious Dx); give sertraline for post-MI MDD.
- 60M + recent MI + asks when he can resume sexual intercourse; answer = as soon as he feels ready; wrong answer is "wait at least two weeks."
- Is abuse reportable? → child + elderly abuse: yes. Domestic abuse: no. Answer for latter is to provide supportive care + as much information as possible about what she can do if she feels unsafe.
- 72M + wife passed away 5 months ago + sometimes hears her voice at night; Dx? → normal bereavement.
- 72M + wife passed away 7 months ago + still grieves; Dx? → pathological grief (normal grief is <6 months).

- 72M + wife passed away 3 months ago + 5kg weight loss + cries + guilt; Dx? → MDD (weight loss/gain is huge indicator MDD in elderly).
- Patient with MDD; which hormone is increased in serum? → Psych shelf answer = cortisol.
- 22M + 1mm pupils + RR of 8 + stuporous; Dx + Tx? → Dx = Opioid/heroin overdose; Tx = naloxone.
- Different between obsessive-compulsive disorder (OCD) and obsessive-compulsive personality disorder (OCPD)? → OCD is ego-dystonic (patient doesn't want/like the thoughts/actions); OCPD is ego-syntonic (patient is content / not looking to modify behavior).
- Tx for diabetic neuropathic pain? → answer = TCA (i.e., amitriptyline). Second-line is gabapentin
- Tx for herpetic / post-herpetic neuralgia (i.e., from shingles)? → gabapentin
- 82M diabetic + neuropathic pain + already taking carbamazepine + gabapentin to no avail; next best step? → switch the meds to nortriptyline (a TCA) → student then asks, "Wait, I thought you said TCAs are first-line. Why does this Q have the guy on those two meds then?" → two points: 1) we don't like giving TCAs to elderly because of their anticholinergic and anti-alpha-1 side-effects, so this vignette happen to try other agents first, but if you're asked first-line, always choose TCA; and 2) if we do give a TCA to an elderly patient, we choose nortriptyline because it carries fewer adverse effects.
- How to differentiate cluster headache from trigeminal neuralgia? → cluster will be a male 20s-40s with 11/10 lancinating pain behind the eye waking him up at night (he may pace around the room until it goes away); details such as lacrimation and rhinorrhea are too easy and will likely not show up on the shelf. In contrast, trigeminal neuralgia will be 11/10 lancinating pain behind the eye (or along the cheek / jaw if V2 or V3 branches affected; it's when V1 is affected that this diagnoses are more readily confused) → TN is brought on by a minor stimulus such as brushing one's hair or teeth, or a gust of wind.
- Tx and prophylaxis for cluster headache? → Tx = 100% oxygen; prophylaxis = **verapamil.**
- Tx and prophylaxis for trigeminal neuralgia? → Tx = goes away on its own because it lasts only seconds; prophylaxis = **carbamazepine.**
- Tx and prophylaxis for migraine? → Tx = NSAID, followed by triptan (triptans are NOT prophylaxis; they are for abortive therapy only after NSAIDs); prophylaxis = **propranolol.**
- 32M + diffuse headache relieved by acetaminophen + sleep; Dx? → answer = tension-type headache.
- Other HY uses for propranolol?

  - Migraine prophylaxis (FM form gives patient with HTN + migraine; answer = propranolol)
  - Akathisia (with antipsychotic use)
  - Thyroid storm (decreases peripheral conversion of T4 to T3)
  - Essential tremor (bilateral resting tremor in young adult; autosomal dominant; patient will self-medicate with EtOH, which decreases tremor); **also the answer on Psych shelf for lithium-induced tremor.**
  - Hypertension + idiopathic tremor (i.e., tremor need not be essential if patient has HTN → answer on FM form is "beta-adrenergic blockade" for the HTN Tx).
  - Esophageal varices prophylaxis (patients at risk of bleeds)
  - Hypertrophic obstructive cardiomyopathy (increases preload → decreases murmur)
  - Social phobia

- 44F + diplopia + dysphagia + eyelid ptosis; all worsen throughout the day; Dx? → myasthenia gravis (MG).
- 44F + proximal muscle weakness + able to perform upward gaze without a problem for 60 seconds; Dx? → Lambert-Eaton (LE) syndrome (if cannot perform, answer = MG).
- Vignette where Dx is either MG or LE but it's not listed; answer? → "neuromuscular junction."
- 44F + difficulty getting up from chair but is able to after several attempts; Dx? → LE.
- Mechanism of MG vs LE? → MG = antibodies against postsynaptic acetylcholine receptors; LE = antibodies against presynaptic voltage-gated calcium channels.
- MG can sometimes be paraneoplastic syndromes of which cancer? → MG from thymoma (do chest imaging to check for thymoma after Dx of MG; if thymoma present + removed, this cures the MG). Up to 80% of patients with thymoma + MG have anti-MUSK Abs (muscle-specific kinase).
- LE can sometimes be a paraneoplastic syndrome of which cancer? → small cell lung cancer.
- How to Dx MG vs LE? → If both are listed, choose antibodies over Tensilon (edrophonium) test.
- What is edrophonium → short-acting acetylcholinesterase inhibitor.
- How do MG vs LE perform with edrophonium? → MG improves drastically; LE less change.
- Tx of MG? → give an acetylcholinesterase inhibitor (i.e., pyridostigmine).
- 6M + ECG shows miscellaneous arrhythmia + seizure-like episode; Dx? → Adam-Stokes attack → not true seizure disorder as per EEG; arrythmia leads to hypoxia of brainstem → seizure-like fits ensue.

- 75M + episodes of loss of consciousness (LoC) for 2 years + tonic-clonic-like episodes + becomes pale and sweaty + Hx of MI; Dx? → answer = "syncope" on the NBME (convulsive syncope).
- Mechanism of narcolepsy? → answer = deficiency of orexin (hypocretin).
- Diagnosis of narcolepsy? → answer = polysomnography.
- What is cataplexy? → loss of muscle tone usually in response to emotional stimulus (e.g., laughter) → seen in narcolepsy.
- Polysomnography findings in narcolepsy? → REM latency: ↓; sleep latency: ↓.
- What is simple vs complex seizure? → simple = no LoC; complex = LoC; patient staring off into space not aware of surroundings = LoC.
- What is partial vs generalized seizure? → partial = affecting one part of the brain; generalized = involves the wholes of both cerebral hemispheres.
- Patient with MDD has fluoxetine discontinued + tranylcypromine commenced one week later + patient develops temp of 105F + HR 110 + RR 25; Dx? → serotonin syndrome; will show up on Psych shelf as simply "drug-drug interaction"; can occur when combining SSRIs with St John Wort, or notably when commencing a MAOi too soon after being on another serotonergic medication.
- Tx of serotonin syndrome? → answer = cyproheptadine (serotonin receptor antagonist).
- Difference between serotonin syndrome and carcinoid syndrome? → serotonin syndrome is from drug-drug interactions and notably causes hyperpyrexia (high fever), tachycardia, and tachypnea; carcinoid syndrome is a result of carcinoid tumors (usually small bowel, appendiceal, or bronchial) secreting serotonin and causes flushing, diarrhea, abdominal pain, and bronchoconstriction.
- How to Dx + Tx carcinoid syndrome? → Dx with urinary 5-HIAA (5-hydroxyindole acetic acid); Tx with octreotide, among other agents.
- Patient witnesses terror attack + has felt emotionally numb for two years since + sometimes disturbed sleep; next best step? → answer = "provide information about the ranges of reactions to trauma."
- 64M + Parkinson disease + 2-month Hx of paranoid behavior; Dx + Tx? → Dx is Parkinson disease psychosis (PDP); Tx on shelf = quetiapine (can Tx with quetiapine or clonidine).

- 45M + survived plane crash two weeks ago + wakes up screaming in middle of night reliving the event; Dx? → answer = acute stress disorder, not post-traumatic stress disorder (PTSD); acute stress disorder is < 1 month; PTSD is > 1 month. Treatment for both is CBT.
- Tx for TCA toxicity? → answer = sodium bicarb → causes dissociation of drug from myocardial sodium channels.
- 25M + schizophrenic non-responsive to many meds + started on new drug + mouth ulcers; Dx? → agranulocytosis secondary to clozapine; stop drug immediately; must do granulocyte checks frequently when first commencing this agent.
- 16M + BMI 31 + snores loudly + morning headaches + 3-5 beats of jerk nystagmus with lateral gaze; Dx? → answer = “sleep-related hypoventilation”; nystagmus is weird finding, but it’s on the Psych NBME; morning headaches are common in sleep-related hypoventilation; can do polysomnography to diagnose.

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