Deck One

Flash Cards

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Shine brightly.

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Finally

You've got this!!! Soon, you will be a certified psychiatric mental health nurse practitioner (PMHNP)!

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Clovis, New Mexico. 88101

Combining which two medications can prolong QTc intervals and lead to an increased cardiovascular risk?

Grapefruit juice...

What can happen if a patient takes valproic acid and lamotrigine?

Saint John's Wort

Nicotine use...

Common drugs metabolized by the renal system?

Taking a MAOI and tyramine together can result in...

Typically, benzodiazepines are avoided in patients experiencing hepatic dysfunction because they are metabolized by the liver.

Which benzodiazepines are safe for use with a patient that has hepatic failure?

CYP3A4 inhibitor, can inhibit many psychotropic medications such as antidepressants, antipsychotics, benzodiazepines, stimulants, and mood stabilizers

Escitalopram and ziprasidone

Dietary supplement available without prescription for the use of depression. It is a strong inducer of CYP3A4

The combination can lead to Stevens-Johnson syndrome. The provider should consider dose reduction of lamotrigine

Gabapentin, acamprosate, and lithium

Tobacco induces CYP1A2, sudden changes in smoking habits can result in medication fluctuation. The provider will need to adjust medications based on nicotine use

Oxazepam (Serax), temazepam (Restoril), and lorazepam (Ativan)

A hypertensive crisis

Blood pressure is 180/120 mm Hg or greater; chest pain, shortness of breath, or symptoms of stroke. Stroke symptoms include numbness or tingling, trouble speaking, or changes in vision

Intellectual Disabilities

Impairments with the Clock Drawing Test indicate problems in the

Which medication can cause lithium levels to increase due to reduced renal clearance?

Which are stronger, inhibitors or inducers?

What is the difference between hypomania and mania?

Before a patient is started on a stimulant, what do you check if they have a family history of CVD?

Global Developmental Delay

Intellectual Developmental Disorder

Right parietal lobe (right hemisphere)

Usually present at birth and can affect a patient's physical, intellectual, and emotional development

Inhibitors are stronger than inducers. If taking both, the inhibitor will increase the inducer drug, possibly causing toxicity. So, in this case, decrease the inducing drug

Lisinopril, thiazides, NSAIDS, and ACE inhibitors

ECG

Duration and severity of DIG FAST symptoms

Occurs during the developmental period of life, and includes both intellectual and functional deficits in reasoning, problem-solving, and academics, with communication challenges, poor social interaction, and difficulties with independent living

Assigned to children under the age of five; the child fails to meet developmental milestones in both intellectual and functional areas of life. Ongoing assessment is required

Language Disorder

Autism Spectrum Disorder

Speech Sound Disorder

Attention-Deficit/Hyperactivity Disorder

Childhood-Onset Fluency Disorder

Tourette's Disorder

Provisional Tic Disorder

Persistent (Chronic) Motor or Vocal Tic Disorder

Impairments in social communication and restricted/repetitive interests and activities

Perform restricted or repetitive patterns of behavior, interests and activities, and can become fixated on certain topics

Stereotyped or repetitive movements

Hypersensitivity to different stimuli

Abnormal motor signs (poor coordination and/or a strange gate)

Difficulties in spoken, written, and other forms of language due to comprehension or function deficits; vocabulary, inability to form sentences, and impaired communication structure

Inattention and hyperactivity resulting in poor performance and disruptive behavior at school and home. Symptoms include distractibility, task avoidance, ignoring details or instructions, losing things easily, hyper-focus, poor organization, and failing to complete tasks. Hyperactive behaviors include constant interruptions, loud/unruly actions, delaying responsibilities, and an inability to sit still.

Challenges with clear articulation; complications for both understanding sound and being able to coordinate movement for sound (use of jaw, tongue, lips...)

Both multiple motor and at least one vocal tic. The tics may come and go in frequency, but must have persisted for more than a year, and have occurred before the age of 18

Disruptions in fluency and patterns of speech (repetitious use, for example: I-I-I-I-I do not...)

A single or multiple motor or vocal tics, but the two variations must not be present at the same time

Single or multiple motor with or without a vocal tick that has been present for less than one year and has occurred before the age of 18

Delusional Disorder

Schizophrenia

Brief Psychotic Disorder

Schizoaffective Disorder

Schizophreniform Disorder

Bipolar Disorder

Disruptive Mood Dysregulation Disorder

Cyclothymic Disorder

Unable to distinguish reality from falsehood. Positive symptoms include delusions, hallucinations, disorganized, speech, and catatonic behavior. Negative symptoms involve diminished emotional expression. Symptoms have persisted for 6 months or greater

One or more delusions (a false belief), lasting one month or longer without marked impairment in bizarre or odd behavior. If the patient is experiencing hallucinations, they must not be prominent

Symptoms associated with schizophrenia and accompanying symptoms related to a mood disorder

One or more delusions, hallucinations, disorganized and/or incoherent communication patterns, and disorganized or catatonic (disrupted awareness) behavior that has lasted at least one day, but less than a month. After the ascending symptoms of sides, the patient returns to normal functioning

Involves both manic highs and depressive lows and extreme mood swings between the two. Mania = elevation of mood or energy, and symptoms include irritability, distractibility, impulsivity, grandiosity, flight of ideas

Increased activity levels, an overall decrease in the need to sleep, and excessive talkativeness, with increased goal-directed activity

1 "fun" week and 2 "blue" weeks

Two or more delusions, hallucinations, disruptive communication patterns, disorganized or catatonic behaviors, and the presence of negative-type (emotional withdrawal, avolition) symptoms for a persistent amount of time during a one-month to six months timeframe

At least a two-year history of hypomanic symptoms, which do not meet the threshold for the hypomanic episode, with periods of depressive symptoms that are also not categorized as a major depressive episode

Age six and older with onset before the age of 10; marked by persistent irritability, anger, and extreme temper outbursts (either verbal or behavioral) that are disproportional to the situation that preceded the action(s)/mood

Major Depressive Disorder

Separation Anxiety Disorder

Persistent Depressive Disorder

Selective Mutism

Generalized Anxiety Disorder

Social Anxiety Disorder

Panic Disorder

Panic Attack

Excessive fear or anxiety when separated from an attached individual

Results in distress, worry, seclusion, sleep disturbance, nightmares about the separation, and physical manifestations

Marked change in depressed mood (anhedonia) with symptoms of sleep disturbances; feelings of guilt or hopelessness; decreased interest in previously enjoyed activities; decreased energy, concentration, and appetite; retardation of speech and physical movement; and suicidal ideation

2 "blue weeks" with 5+ symptoms

Failure to speak in social situations that normally require communication

Not related to another underlining condition

Lasts for at least two years. The patient has at least two of the depressive symptoms listed above during the two-year period with symptoms lasting more than two months at a time

Increased fear or worry when placed in social situations

The anxiety is disproportional to the actual threat that is posed within the social or sociocultural environment, and the avoidant behavior lasts for six months or more

Persistent worry; manifest in both physical and physiological symptoms with changes in vital signs and mental stability

Sweating, uneasiness, tachycardia, nausea, shortness of breath, loss of control, chest pain, muscle tension, irritability, decreased sleep, decreased energy, restlessness, and decreased attention span

Occurs more days than not for at least six months with the patient finding it difficult to control the worry

Brief period of marked intense mental and physical discomfort which is activated by the fear response

Sweating, shaking, dizziness, disassociation, tachycardia, nausea, shortness of breath, fear of dying or going crazy, chest pain, and/or chills

Recurrent panic attacks with persistent concern or worry about having additional panic attacks for at least a month

Agoraphobia

Hoarding Disorder

Obsessive-Compulsive Disorder

Reactive Attachment Disorder

Body Dysmorphic Disorder

Post-traumatic Stress Disorder

Adjustment Disorders

Acute Stress Disorder

Difficulty discarding or trashing personal possessions, because of a desire to save them and has nothing to do with concern over the monetary value

Fear or panic when a patient is placed in a public or crowded place for which they believe cannot be escaped

Child is unable to form healthy emotional bonds with caretakers, often because of emotional neglect or abuse at an early age and the child becomes emotionally withdrawn and rarely seeks comfort or attention (think foster care child)

Persistent and reoccurring thoughts, urges, or ideas that are unwanted, distressing, and mind-based. Obsessive thoughts are resistant, despite efforts to ignore, or suppress the obsession

Obsessional thoughts are extremely distressing and can be seen by the patient as extremely inappropriate, disheartening, or even immoral. Patients are able to recognize the issues

Compulsions are considered a counterbalance used to reduce the distress that is caused by obsessive and intrusive thoughts

Trauma related to a violent or life-threatening event, that results in intense feelings and emotions such as fear, helplessness, and terror

Must have been life threatening or a physical and/or sexually violent act

Experience flashbacks of the event and can have moments of disassociation, nightmares, hyperarousal, hypervigilant

Will often avoid people, places, and situations that may be associated with traumatic memory; may have delayed onset

Preoccupation with one's defects or physical flaws (even though others around them do not see the same issues

Results in repetitive behaviors; constantly checking on oneself in the mirror, excessively combing hair, picking at the skin, and comparing oneself to others regarding appearance

Exposed to a traumatic event, either witnessing or experiencing the event in person or watching it occur to someone else

Followed by intrusive thoughts of the situation; nightmares or distressing dreams; flashbacks; depression; disassociation and/or dissociative amnesia; avoidance of thoughts, memories, or feelings pertaining to the event; sleep disturbances; and or irritability

Lasts between three days to one month after the traumatic event with symptoms beginning immediately after the trauma

Sadness, hopelessness, worry, and anxiety that develop within three months in response to a known and identifiable stressor

Dissociative Identity Disorder

Conversion Disorder

Dissociative Amnesia

Factitious Disorder

Somatic Symptom Disorder

Pica

Avoidant/Restrictive Food Intake Disorder

Rumination Disorder

Physical symptoms (motor or sensory), such as numbness, blindness, deafness, seizures, or other manifestation, yet has no underlying neurologic or medical diagnosis

(Man goes blind after wife dies...)

Consistent patterns of derealization, depersonalization, and memory lapse culminating into a complete and separate identity state with identity fragmentation

Completely different person from one situation to the next (two or more distinct personality states)

Imposed on Self – a false medical or psychiatric condition, where the patient deceives or misrepresents an illness or injury, in order to deceive (gain something in return)

Imposed on Another – falsifying the physical or psychological symptoms, disease, or injury of another person, in order to deceive or mislead. The other person is considered a "victim" and in an abusive situation in which the perpetrator intentionally harms the other

Episodic, retrograde amnesia of autobiographical content (personal information) that occurs in conjunction with or around the same time as a traumatic event

Eating disorder in which a person eats things not normally considered food

Distress, worry, anxiety, or alterations in normal functioning as a result of significant focus on physical conditions or symptoms (such as pain)

Repetitive regurgitation of food

Failure to consume the required daily amount of nutritional food, due to a lack of interest or aversion to eating

Significant weight loss and nutritional deficiency

Self-sustain by consuming supplements

Anorexia Nervosa

Encopresis

Bulimia Nervosa

Insomnia Disorder

Enuresis

Narcolepsy

Oppositional Defiant Disorder

Gender Dysphoria

Involuntary or intentional act of defecating in inappropriate places. At least 4 years old

Caloric restriction, low body weight (BMI), poor physical health, and developmental delays

Extreme fear of being fat or gaining excessive weight with disregard for the severity of the situation and can become obsessed with persistent behaviors designed to lose as much weight as possible

Extremely underweight, nervous or fearful about gaining weight, has distorted perceptions about weight, and participates in extreme exercising or even purging patterns to lose weight

Difficulties falling asleep, staying asleep, or waking up too early

Erratic sleep patterns and loss of sleep result in significant stress and dysfunction

Results in irritability, fatigue, and inattention

Distorted eating that results in impulsive overeating, followed by compulsive purging (vomiting)

Tied to self-esteem. Worries that being overweight will result in rejection by others

Prevention can also occur through the use of laxatives, diuretics, and fasting

Neurological disorder; excessive daytime sleepiness, suddenly falling asleep without warning or desire

Muscle paralysis while awake (cataplexy), vivid hallucinations during transitions from sleep to wakefulness or vice versa, suddenly falling asleep, and sleep paralysis

Repeated urination in bed or when wearing clothes

At least 5 years old

Mismatch between a patient's biological sex assigned at birth and their own personal gender identity

Strong desire to be another gender and like to participate in events such as cross-dressing or showing preferences for activities that are commonly gender-categorized. Desire to outwardly manifest primary and/or secondary gender-specific characteristics to which they identify

Starting before age 8, but no later than age 12

Patterns of angry and irritable mood with argumentative, defiant behavior to include erratic temper, being easily annoyed, and argumentative with authority figures/other children/adults. Will refuse to follow rules or listen to anyone in authority

Tries to annoy others and seek to blame others for their own mistakes and behavior

Intermittent Explosive Disorder

Pyromania

Conduct Disorder

Kleptomania

Antisocial Personality Disorder

Substance Use Disorder

Delirium

Alcohol Use Disorder

Start a fire on more than one occasion

Can become aroused and excited just before setting the fire; fascinated with intense curiosity and attraction towards situations involving fire; a sense of relief and satisfaction

Behavioral outbursts defined by an inability to control aggression and resulting in temper tantrums and physical fighting/aggression toward others, animals, or property

Are impulsive and not planned occurrences and result in significant problems both at home and in school and can occur in children of at least 6 years of age

Need to steal based on impulse/emotion and not for financial gain; sense of tension and excitement during and immediately after the act

Great pleasure and satisfaction in stealing and is not in response to anger or psychosis

Known bully who threatens and intimidates; behaviors that violate the basic rights of others

Intimidation, participating in physical fighting, use of a weapon with the intent to harm, animal cruelty, extortion, armed robbery, destruction of property, and deliberately disobeying rules.

Children under the age of 18

Use of substances or medications that impair control, result in physical dependence, complicate social and interpersonal relationships, and are often associated with risky behavior and impulsivity

Unable to decrease use or stop

Over the age of 18 with persistent patterns of behavior that intrude or infringe on the basic rights of others including deception, aggression, violence, theft, and cruelty

Criminals with impulsive disregard for safety; liars with extreme aggression and a propensity for irresponsible behavior with extreme remorselessness

Persistent pattern of alcohol use

History of unsuccessfully stopping or cutting down and spending a great deal of time and money

Done to cope with challenges at home and work; can result in tolerance

Disturbance in attention with a reduction in the ability to focus and remain aware

Occurs within hours to a few days and is a marked change from baseline

Memory deficit, disorientation, changes in language, or perception

Alzheimer's Disease

Vascular Neurocognitive Disorder

Frontotemporal Neurocognitive Disorder

Traumatic Brain Injury (TBI)

Lewy Body Dementia

Human immunodeficiency virus (HIV)

Parkinson's Disease

Prion Disease

Progressive cognitive deficits; changes in executive functioning (confusion; attention and concentration difficulties; disorganization; inability to analyze, develop, or communicate thoughts and plans to others)

Decreased cerebral blood flow to the brain

Sudden and stepwise decline

Most common type of dementia

Loss of memory and cognitive decline with a decrease in neural activity in the parietal cortex, hippocampus, and basal forebrain

Must have a clear decline in memory and learning with a steady progressive decline in cognition

Caused by sports injury, car accident, penetrating object, or damage by a blunt object

Dizziness, loss of consciousness, coma, subdural or subarachnoid hemorrhaging and/or cerebral edema; decreased or lost autonomic nervous system function

Frontotemporal dementia, damaged neurons in the frontal and temporal lobes of the brain

Slow and steady progression with marked behavioral changes, apathetic behavior, compulsive or ritualistic type behavior, language degradation, and memory/perceptual motor functioning complications

Neurocognitive; earliest stages include impairment in concentration, memory, and executive functioning with progressive psychomotor retardation, depression, irritability

Motor degradation over time

Abnormal deposits of a protein resulting in chemical alterations in the brain, which can lead to a slow and gradual progression of changes in cognition, attention, and alertness

Recurrent visual hallucinations and Parkinsonian-like movements

Normal prion proteins become abnormally folded, causing memory impairment, personality changes, and difficulties with movement

(Bovine Spongiform Encephalopathy)

Deterioration of dopamine-releasing neurons in the substantia nigra

Tremors, unsteady movements, loss of balance, pill-rolling movement in their hand, bradykinesia, stiffness, and facial masking

Huntington's Disease

Schizotypal Personality Disorder

Paranoid Personality Disorder

Antisocial Personality Disorder

Schizoid Personality Disorder

Borderline Personality Disorder

Narcissistic Personality Disorder

Histrionic Personality Disorder

Marked social and interpersonal deficits

Inability to form close relationships; cognitive or perceptual distortions to include delusions, magical thinking, superstitious beliefs, and can be paranoid

Hereditary and progressive; mutation in the HTT gene

Chorea, involuntary jerking, and hand-flapping movements. Progressive cognitive decline and is fatal within 10-20 years following a diagnosis

Behavior that violates the rights of others and includes purposeful deception, aggression, and violence

Distrust and suspicion of others; doubt loyalty and trustworthiness and are reluctant to confide in others

Unforgiving and quick to anger and/or attack, and can be suspicious of loved ones

Instability with mood, affect, behavior, relationships, and identity

Dysphoric and emotionally unstable, can have suicidal and homicidal tendencies, may experience psychosis-like and dissociative symptoms, and are quick to anger and be negative

Relationships are often short-lived and unstable; sensitive to interpersonal rejection, yet attempt to avoid abandonment

Detachment from social relationships with restricted expression and emotions within personal settings

Avoid close relationships; primarily loners with little to no interest in sexual relationships and can be cold

Pattern of exaggerated emotionality and attention-seeking behaviors

Uncomfortable in situations where not the center of attention and interaction with others can result in inappropriate sexual or provocative behavior

Expressions of emotion are rapidly changing and insincere; believe relationships to be more romantic and intimate than they are in reality

Need for admiration and extremely self-centered

Exaggerate talents and achievements, and become preoccupied with power, success, beauty, and an idealistic way of life; seek attention and admiration. A total sense of entitlement

Avoidant Personality Disorder

Cerebrum

Dependent Personality Disorder

Corpus callosum

Obsessive-Compulsive Personality Disorder

Left hemisphere

Cerebral cortex

Right hemisphere

Largest part of the brain

Responsible for all higher-order functions (learning, memory, communication, sensation, and movement)

Divided into a left and right hemisphere by the longitudinal fissure

Avoid others; however, unlike schizoid, they do desire personal interaction and relationships

Chronic self-doubters and are extremely sensitive to the idea of rejection

Connects the two left and right hemispheres and allows for communication (essential for normal functioning)

Heavily rely upon others in multiple areas of life; to make decisions and to give them a sense of purpose

Pathologically agreeable and avoid conflict at all costs to avoid losing a relationship; extremely maladaptive and gullible

Dominant for most people and controls right-side functions

Emotional and behavioral rigidity with a need to have total control and order, avoid new experiences, and be inflexible to change.

Believe that their way is the “right way.”

Controls most of the left-sided functions of the body

Outermost layer of the cerebrum and is made up of neuron cell bodies

Responsible for many of the human "higher functions"

Divided into four lobes - FPOT: the frontal lobe, the parietal lobe, the occipital lobe, and the temporal lobe

Cerebellum

Pons

Brainstem

Medulla oblongata

Midbrain

Spinal cord

Frontal lobe

Lobes of the brain

Connects the medulla oblongata and the thalamus

Responsible for relaying impulses from the motor cortex to the cerebellum, medulla, and thalamus

Located behind the cerebrum

Responsible for coordination of complex movements, balance, and posture

Dysfunctional cerebellum will cause a patient to have erratic and uncoordinated movements

Responsible for autonomic functions (heartbeat, blood pressure; reflexes – vomiting, swallowing, and sneezing)

Regulates the respiratory system via chemoreceptors that can detect changes in blood chemistry

Midbrain, pons, and medulla oblongata

Responsible for the most basic and vital human functions such as breathing, maintaining a heartbeat, sleeping, and other primitive functions

Main connection for neurons traveling between the brain and all other organs throughout the body

Any trauma caused by external forces or pathological reasons (disease) along this delivery system will affect and hinder functions at and below the location

Relay system; plays an important role in vision and hearing as well as motor control, sleep/wake cycles, alertness, and temperature regulation

Frontal, Parietal, Temporal, and Occipital

"Brainiest" part of the brain

Executive functioning (decision making); think, plan, solve, decide, emotional behavior)

Damage to frontal cortex will cause

Temporal lobe

Primary motor cortex

Wernicke’s area

Broca's area

Memory formation and emotion also occur in the...

Parietal lobe

Occipital lobe

Located on the lower side of the cerebrum, just above the ears

This is the auditory cortex. Auditory sensory information from the ears is processed within the auditory cortex

Damage to the frontal cortex can disrupt basic instincts and patients can be impulsive with inappropriate and have strange behavior

Located in the temporal lobe

Responsible for receptive speech or language comprehension. Damage to this area can result in receptive aphasia

Controls voluntary movements, such as giving a thumbs up, or shooting a basketball

Temporal lobe

Complications within the temporal lobe can result in hallucinations, aphasia, and amnesia

Found within the frontal lobe; responsible for language production. Damage to this area can result in expressive aphasia

Primary visual cortex - back of the brain

Sensory information coming from the eyes will travel to the occipital cortex and will be processed into what is seen

Problems in the occipital lobe can lead to visual field deficits, blindness, and visual hallucinations

Located just behind the frontal lobe and separated by the central sulcus

Processes sensory information within the somatosensory cortex - taste, reading, and writing

Complications within the parietal lobe could cause sensory-perceptual disturbances in perceptions resulting in increased, decreased, or distorted hearing; vision; touch sensation; smell or kinesthetic responses to stimuli

The Limbic System consists of...

Thalamus

The Limbic System is essential for...

Hippocampus

Hypothalamus

Amygdala

Broca’s aphasia (expressive aphasia)

Increased levels of corticotropin releasing hormones in the amygdala, hippocampus and locus coeruleus can cause?

Smell and flow of sensory information; regulates emotions, memory, and related affective behaviors

Amygdala, hippocampus, hypothalamus, and thalamus

Converts short-term memory into long-term memory. Regulates motivation, stress, emotion, and learning

Essential for the regulation of emotion, memory, motivation, and behavior

Mediates mood, emotional memories, fear, anxiety, anger, stress, emotion, and aggression

Appetite, hunger, thirst, water balance, circadian rhythms, body temperature regulation, libido, and hormone regulation

Increased anxiety

Can occur due to a stroke, brain tumor, or brain trauma

A patient may have difficulty producing speech. They can understand and know what they want to say, but are not able to form words used in verbal communication

Wernicke’s aphasia

CN III (CN 3)

Cranial Nerve I (CN 1)

CN IV (CN 4)

CN II (CN 2)

CN V (CN 5)

CN VII (CN 7)

CN VI (CN 6)

Oculomotor: Motor – adjust and coordinate eye position during movement. Move and blink eyes; pupils: reactions to light and accommodation; corneal reflex

Can happen as a result of hemorrhagic or ischemic stroke

A patient may speak clearly and produce speech, but their speech has no meaning and may have difficulty understanding language

Trochlear: Motor – innervates superior oblique muscle to lift the eyes to look down. The nerve also enables the eyes movement toward the nose or away from it

Olfactory: Sense of smell and patency of the nasal passages

Trigeminal: Sensations in face and cheeks, taste and jaw movements; biting, chewing and swallowing, and facial and scalp sensations

Optic: Vision

Abducens: Motor – innervates the ipsilateral lateral rectus muscle with partially innervation of the contralateral medial rectus muscle to produce lateral eyeball movement

Facial: Facial expressions and sense of taste

CN VIII (CN 8)

CN XI (CN 11)

CN IX (CN 9)

CN XII (12)

CN X (CN 10)

Norepinephrine

Dopamine

Serotonin

Accessory: Shoulder and neck muscle movement

Vestibulocochlear: Sense of hearing and balance

Hypoglossal: Ability to move the tongue

Glossopharyngeal: Ability to taste and swallow

Produced in the locus coeruleus and medullary reticular formation

Vagus: Elevation of uvula and gag reflex

Produced in the raphe nuclei of the brainstem

Produced in the substantia nigra, nucleus accumbens, and ventral tegmental area (VTA)

Acetylcholine

Glutamate

γ-Aminobutyric acid (GABA)

Pharmacokinetics

Which drug class binds with GABA to "calm" a patient?

Pharmacodynamics

Inverse agonist effect

Agonist effect

The most abundant excitatory neurotransmitter. Too much glutamate will cause anxiety

Synthesized by the nucleus basalis of Meynert

How the body interacts with administered medications – what the BODY does to the drug

The most abundant inhibitory neurotransmitter

This is the calming neurotransmitter

A decrease in GABA will increase anxiety

How a drug (via molecular, biochemical, and physiologic effects or actions) affects the body – what the DRUG does to the body

Benzodiazepines

When a drug binds to a receptor and ACTIVATES or opens the ion channel

When a drug causes the OPPOSITE EFFECT of an agonist: binding and closing an ion channel

Partial agonist effect

A drug-drug interaction can cause...

Antagonist effect

If a patient is taking sertraline (Zoloft) and begins taking the mood stabilizer carbamazepine (Tegretol), what will occur?

It takes how many half-lives to eliminate a medication form the body?

If a patient is taking sertraline (Zoloft) and begins taking ritonavir (Norvir; a HIV retroviral), what will occur?

How does reduced kidney clearance effect medications?

How does liver disease impact enzyme activity and first-pass metabolism?

Delayed, decreased, or enhanced absorption of either drug

Decrease or increase the action of either or both drugs

Adverse effects

When a drug DOES NOT FULLY ACTIVATE the ion channel (less effective than an agonist)

Carbamazepine (Tegretol) is a known inducer. The inducer speeds up the metabolism of the other drug. So, sertraline metabolism INCREASES, resulting in an overall DECREASE in drug effectiveness

When a drug binds to a receptor and it DOES NOT ACTIVATE a biological response

Ritonavir (Norvir; a HIV retroviral) is a strong inhibitor, resulting in DECREASED metabolism of Zoloft and an overall INCREASE in the amount of sertraline (Zoloft) in the system

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Reduces drug clearance

Reduces the synthesis of plasma proteins and causes changes in liver blood flow and medication distribution

Results in TOXIC (high) drug levels (this can vary based on the chemical characteristics of the medication and severity of liver disease)

Reduction in kidney clearance can INCREASE drug serum concentrations resulting in symptoms such as confusion, tremors, slurred speech, and vomiting

Which mood stabilizer is cleared by the renal system?

Inducers

Which medications can INCREASE drug serum concentrations resulting in symptoms such as confusion, tremors, slurred speech, and vomiting?

Inhibitors

What occurs during old age that affects medication?

Cytochrome P-450 (CYP) enzymes

1A2

First-pass metabolism

DECREASE serum drug levels = Subtherapeutic

Lithium

INCREASE serum drug levels = Supratherapeutic

NSAIDS (ibuprofen [Advil or Motrin] and naproxen [Naprosyn or Aleve])

Thiazides (bumetanide [Bumex], ethacrynic acid [Edecrin], furosemide [Lasix])

ACE Inhibitors (lisinopril [Prinivil or Zestril])

Responsible for the metabolism of many psychotropic medications and can be inhibited or induced by certain drugs, resulting in significant drug-to-drug interactions and adverse reactions

DECREASED intracellular water

DECREASED protein binding capabilities (not necessarily caused by old age, but by the disease processes seen with aging)

DECREASED (low) muscle mass

DECREASED metabolism

Process by which the drug is metabolized by P-450 enzymes in the intestines and liver prior to going to systemic circulation

Inducers: Phenobarbital, Carbamazepine, Phenytoin, Tobacco

Inhibitors: Fluvoxamine, Fluoxetine, Paroxetine, Sertraline

2C9

3A4

2C19

Clozapine (Clozaril) is an atypical antipsychotic that is metabolized by the...

2D6

Inducers: Bull Shark CRAP GPS+

Inhibitors: can cause "Big Freaking Problems"

If a patient who smokes and is taking phenobarbital stops smoking what should the clinician do?

Inducers: Carbamazepine, Phenytoin, Phenobarbital, Saint John's Wort, Rifampin

Inhibitors: Fluvoxamine, Nefazodone, Clarithromycin, Erythromycin, Fluconazole

Inducers: Carbamazepine, Rifampin

Inhibitors:Valproic acid, Fluoxetine

P-450 enzyme 1A2

Inducers: Carbamazepine, Valproic acid, Phenobarbital, Phenytoin

Inhibitors: Fluvoxamine, Fluoxetine

Barbiturates
St John's Wart

Carbamazepine
Rifampin
Alcohol
Phenytoin

Griseofulvin
Phenobarbital
Sulfonylureas
+ smoking and the pill

Inducers: None

Inhibitors: Bupropion, Fluoxetine, Paroxetine, Duloxetine

The clinician needs to remember to adjust or decrease the dose of medication since it is no longer being induced (if not, there will be too much medication in the system)

Bupropion
Fluoxetine
Paroxetine

Blockage of Muscarinic acetylcholine receptors by antipsychotics can cause:

Blockage of Histamine receptors by antipsychotics can cause:

Blockage of A-1 norepinephrine receptors by antipsychotics can cause:

Blockage in the mesolimbic area pathway results in:

Blockage of Serotonin receptors by antipsychotics can cause:

Blockage in the mesocortical pathway results in:

Blockage in the tuberoinfundibular pathway results in:

Blockage in the nigrostriatal pathway may lead to:

Sedation, weight gain, insulin resistance, diabetes, and hyperlipidemia

Constipation, urinary retention, blurry vision, dry mouth, tachycardia, and cognitive impairment

A decrease in hallucinations, delusions, and other positive symptoms typically seen in schizophrenia or other psychotic conditions

Orthostatic hypotension and reflex tachycardia

Negative symptoms or diminished energy, lack of motivation, restrictions and emotions, and alterations in social engagements

Sedation and weight gain; however, modulation of these receptors may be the reason for improvement in treating depression and other bipolar disorders

Extrapyramidal symptoms (EPS), such as tardive dyskinesia, parkinsonian-like symptoms (i.e., tremors, muscle rigidity, and difficulty starting and stopping movement)

Decreased follicle-stimulating hormone (FSH) and an increase in prolactin, resulting in amenorrhea, gynecomastia, galactorrhea, and/or sexual dysfunction

Akathisia = the “Ants in ‘yo pants” effect can cause:

Available treatment options for akathisia:

Akathisia is commonly measured using the...

Akinesia =

Akathisia is often mistaken for:

Pharmacological management of akinesia is:

What causes Pseudo-parkinsonism?

Pseudo-parkinsonism =

Beta-blockers (caution must be taken; beta-blockers can result in bronchospasms, do not give to a patient if they are already on a bronchodilator)

Benztropine (Cogentin; anticholinergic)

Benzodiazepines

Restlessness
Pacing motions
Difficulty standing still
Feet constantly in motion
Rocking

The absence of movement; cannot initiate motion or has a lack of motivation to move

Barnes Akathisia Rating Scale (BARS) or the Extrapyramidal Symptom Rating Scale (ESRS)

Benztropine (Cogentin; anticholinergic)

Increased anxiety

Stooped posturing
Shuffling gait
Rigidity
Bradykinesia
Tremors while at rest
Pill-rolling hand motions

The blockage of dopamine-2 (D2) receptors either pathologically or due to antipsychotic medication use

Pharmacological treatment for seudo-parkinsonism?

Oculogyric Crises =

Acute Dystonia =

Oculogyric Crises can be treated with:

Acute Dystonia can be mistaken for:

Tardive Dyskinesia =

How long can it take for tardive dyskinesia to occur?

Tardive Dyskinesia can cause...

A rare presentation of acute dystonia, which can lead to permanent eye injury due to involuntary upward deviation of the eyes – bilaterally

Benztropine (Cogentin; anticholinergic)

Benztropine (Cogentin; anticholinergic)

Facial grimacing
Involuntary upward eye movement
Muscle spasms of the tongue, face, and/or neck
Laryngeal spasms
Symptoms may or may not be reversible

Iatrogenic movements caused by the blockade of dopamine receptors

Agitation or unusual stereotypical movements associated with schizophrenia

Rolling and protruding of the tongue
Sucking and/or smacking of the lips
Chewing motions
Facial dyskinesia
Involuntary movement of the extremities

It can take up to one to two years for tardive dyskinesia to present itself

It can always occur acutely at the start of medication treatment or present chronically at any point after treatment

Treatment options for tardive dyskinesia:

Which medication is known for causing tardive dyskinesia (involuntary puckering/pursing of lips and sticking out of the tongue)

Besides Clozaril, what other medications can treat tardive dyskinesia?

The first-generation antipsychotics, or typicals, block almost all of which receptors?

Which medication should be avoided in a patient with tardive dyskinesia?

Second-generation antipsychotics, or atypicals, block...

A patient having mild anxiety should be treated with...

What are the three second generation antipsychotics with fewer instances of weight gain?

Metoclopramide (Reglan; antiemetic agent)

Reduce the medication dose

Stop the offending medication

Or switch to clozapine (Clozaril; atypical antipsychotic)

Dopamine (1 through 5) receptors

Deutetrabenazine (Austedo; selective vesicular monoamine transporter 2 [VMAT2] inhibitor)

Valbenazine (Ingrezza; VMAT2 inhibitor) are also FDA approved to treat tardive dyskinesia

Both D2 receptors and 5-HT2A (serotonin) receptors

The blockage of 5-HT2A may increase levels of dopamine in areas of the brain that are in need and often are deprived of dopamine when using a typical anti-psychotic and can reduce side effects

Benztropine (Cogentin; anticholinergic) should be AVOIDED because it is known to worsen tardive dyskinesia

Ziprasidone (Geodon)
Aripiprazole (Abilify)
Lurasidone (Latuda

"ZAL" she's a skinny gal!

Psychotherapy only (or nothing)

Neuroleptic Malignant Syndrome (NMS) =

Pharmacological management of NMS =

The provider will need to monitor which laboratory values with NMS?

What are the common classes of medications used to treat depression?

NMS presents with a characteristic pattern of symptoms:

Selective serotonin reuptake inhibitors (SSRIs)

SNRIs can also be used for:

Serotonin-norepinephrine reuptake inhibitors (SNRIs)

Administer bromocriptine (dopamine [D2] agonist)

Administer dantrolene (Dantrium; skeletal muscle relaxant) for extreme muscle rigidity

“BRO, you’ve got NMS! DAN, relax, I’ll be fine”

Adverse reactions to antipsychotic use

More common with first-generation antipsychotics

Causes extreme muscle rigidity and mutism

The provider will need to monitor laboratory values

SSRIs
SNRIs
TCAs
MAOIs
Atypicals

Increased CPK (caused by muscle destruction)

Myoglobinuria (caused by rhabdomyolysis)

Increased white blood cells (WBCs; leukocytosis)

Increased aspartate aminotransferase (AST) and alanine transaminase (ALT) on a liver function test (LFT)

Fluoxetine (Prozac)
Paroxetine (Paxil)
Sertraline (Zoloft)
Fuvoxamine (Luvox)
Citalopram (Celexa)
Escitalopram (Lexapro)

Are safer in overdose and can be given to many cancer patients d/t fewer drug interactions

"FEVER"

Fever
Encephalopathy
Vital sign instability
Elevated WBC and CPK
Rigidity

Desvenlafaxine (Pristiq)
Duloxetine (Cymbalta)
Levomilnacipran (Fetzima)
Venlafaxine (Effexor XR)

Neuropathic pain (Cymbalta)

So, if the patient presents with depression and neuropathic pain, consider using a SNRI

Tricyclic antidepressants (TCAs)

Hypertensive crisis may occur when taking an MAOI in conjunction with...

TCAs can cause:

Symptoms of hypertensive crisis:

Monoamine oxidase inhibitors (MAOIs)

Hypertensive crisis treatment plan:

Bupropion (Wellbutrin) is contraindicated with a patient history of...

Atypical antidepressants =

Foods containing tyramine

Strong or aged cheeses
Cured meats
Smoked or processed meats
Pickled or fermented foods
Sauces
Soybeans
Dried or overripe fruits
Yeasted products
Alcoholic beverages (tap or home-brewed beer; red wine, sherry, and liqueurs

Amitriptyline (Elavil)
Doxepin (Silenor)
Imipramine (Tofranil)
Nortriptyline (Pamelor)

Elevated blood pressure
Explosive headaches
Facial flushing
Heart palpitations
Pupillary dilation
Excessive sweating
Fever

Dry mouth
Slight blurring of vision
Constipation
Urinary complications
Drowsiness
Dizziness
Weight gain
Excessive sweating (especially at night)

Discontinue the offending agent

Administer phentolamine (Regitine; α-adrenergic agonist)

Tranylcypromine (Parnate)
Selegiline (Emsam)
Isocarboxazid (Marplan)

Bupropion (Wellbutrin; NDRI)
Mirtazapine (Remeron; α-2 receptor antagonist)
Trazodone (Molipaxin; serotonin modulator)

Seizures

Eating disorder (bulimia or anorexia)

It can decrease the seizure threshold and cause a seizure; or for a patient with an eating disorder, there is an increased risk for seizures d/t electrolyte imbalance

What can occur when there is too much serotonin in the system? Usually caused by taking too much medication or due to a drug-to-drug interaction

Serotonin Syndrome treatment plan:

Which drug combinations that can cause Serotonin Syndrome?

When switching from a SSRI to a MAOI, the patient will need to...

Symptoms of Serotonin Syndrome =

When switching from fluoxetine (Prozac) to a MAOI, the patient will need to...

Serotonin Discontinuation Syndrome =

When switching from a MAOI back to fluoxetine (Prozac), the patient will need to...

Discontinue the offending agent

Administer Cyproheptadine

(Periactin, antihistamine)

Serotonin Syndrome

Wait 14 days

SSRIs taken with MAOIs

Taking more than one SSRI at a time

Drug and herbal interactions. Some examples include ginseng, St. John's wort, Syrian rue, Garcinia cambogia (HCA), 5-HTP, SAMe, and nutmeg

Wait 5 to 6 weeks

Hyperreflexia (overactive body reflexes)
Myoclonic jerks
Sweating
Fever
Extreme headaches
Confusion
Tachycardia (heart rate > 100 BPM in adults)
Agitation

Wait 14 days

Occurs when a patient stops taking a SSRI or SNRI abruptly

Symptoms of Serotonin Discontinuation Syndrome =

Bipolar DIG FAST =

Never use an SSRI with a...

Bipolar MANIA medications:

SSRIs can increase...

Bipolar DEPRESSION medications

Carbamazepine (Tegretol; anticonvulsant) = BLACK BOX WARNING

Side effects of mood stabilizers

DIG FAST

Distractibility, impulsivity, grandiosity, flight of ideas, increased activity, decreased need for sleep, and talkativeness

Myoclonic jerks
Flu-like symptoms (worse with TCAs)
Fatigue
Myalgia (muscle aches and pain)
Decreased concentration
Nausea and vomiting
Ataxia (an unsteady gait)
Impaired memory
Agitation
Hyperreflexia

Lithium carbonate (Eskalith; antimanic)
Carbamazepine (Tegretol; anticonvulsant)
Divalproex (Depakote; anticonvulsant)
Oxcarbazepine (Trileptal; anticonvulsant)

MAOI

Lamotrigine (Lamictal; anticonvulsant)
Furasidone (Latuda; atypical antipsychotics)
Olanzapine-fluoxetine combo (Symbyax)
Quetiapine (Seroquel; atypical)

Lithium and carbamazepine serum levels

Stevens-Johnson Syndrome – STOP taking with these signs (Lamictal)

Fever
Sore throat
Facial and tongue swelling
Severe rash
Skin sloughing
Painful mucus membranes

Agranulocytosis (extremely low WBCs-type)

Aplastic anemia (pallor, fatigue, headache, fever, nose, bleeds, bleeding gums, skin, rash, and shortness of breath)

An Asian patient starting on a mood stabilizer must first...

First-line pharm treatment of OCD includes...

Always, ALWAYS perform what BEFORE starting a female patient (12-51 yo) on a mood stabilizer?

Medications are not treating personality disorders directly but used to target and improve the symptoms. What medications can treat the symptoms?

Anxiolytics (stress, panic, social anxiety, obsessive-compulsion...)

What medication is used to treat anorexia?

Medications that can cause mania:

What medication is used to treat bulimia?

Fluoxetine (Prozac)
Sertraline (Zoloft)
Fluvoxamine (Luvox)
Citalopram (Celexa)
Escitalopram (Lexapro)
Vilazodone (Viibyrd)

Be screened for the HLAB-1502 allele before starting on carbamazepine (Tegretol; anticonvulsant), because of increased risk for carbamazepine-induced Stevens-Johnson Syndrome

Impulsivity/anger - SSRIs, atypicals

Schizotypal-type - low dose olanzapine and risperidone

Emotional instability - lithium, divalproex, atypicals

Perform a pregnancy test (HCG) and check pregnancy status BEFORE starting a female patient of child-bearing years (12-51) on a mood stabilizer due to increased risk of neural tube defects

There is no medication treatment specifically for anorexia nervosa, however, atypical antipsychotics (olanzapine; Zyprexa) can reduce delusional thinking associated with the need to lose weight

GAD - SSRIs, Buspar, Lyrica

Stress-related anxiety - benzos, Atarax or Visaril

Panic Disorder - benzos, antidepressants

Social Phobia - Inderal, Effexor, SSRIs

Stress-related Insomnia - Ambien, Lunesta, Restoril

Nightmares - Minipress

Bulimia nervosa can be treated with antidepressants - Prozac

Steroids (can also cause psychosis)

disulfiram (Antabuse)

isoniazid (INH; antituberculosis agent)

Antidepressants when taken by patients with BD

Medications that can cause depression:

Teratogenic Risks of benzodiazepines:

What medications can render mood stabilizers ineffective and what needs to be done about it?

Teratogenic Risks of carbamazepine:

Teratogenic Risks of lithium:

Teratogenic Risks of divalproex:

The GOLD standard for treating mania =

Lithium is considered at toxic levels when equal to or greater than...

Floppy infant syndrome (decrease muscle tone) and cleft palate (malformation of the mouth with an opening in the pallet that can result in difficulty communicating and feeding)

Steroids
Isotretinoin (Accutane)
Beta-blockers
Interferon (Intron; cytokine)
Retrovirals
Antineoplastics
Benzodiazepines
Progesterone (Prometrium)

Neural tube defects (complications of the brain, spine, and/or spinal cord that can cause paralysis, urinary and bowel complications, blindness, deafness, developmental, intellectual disabilities, and death

Fluticasone (Flonase; corticosteroid)
Prednisone (Rayos; corticosteroid)

Provider will need to make mood stabilizer dose adjustments after talking with the PCP

Neural tube defects and spina bifida (spinal cord that does not develop properly and can be seen on the skin above the spinal defect

Ebstein anomaly (heart defect; tricuspid valve abnormality resulting in blood leakage back though the valve)

1.5 mEq/L

Lithium

There is strong evidence supporting the fact that lithium has an...

Side effects of lithium treatment:

Teratogenic Risks of divalproex:

Clozapine (Clozaril) has an increased risk for causing...

Baseline labs should be taken before starting lithium:

Neutropenia is defined as an ANC less than...

When should the PMHNP d/c clozapine d/t agranulocytosis?

When should the PMHNP d/c clozapine d/t neutropenia?

Hypothyroidism
Coarse hand tremors
Maculopapular rash
Diarrhea, vomiting, and cramps
Anorexia
T-wave inversion as noted on ECG
Leukocytosis (increased WBCs)

Anti-suicidal effect

Neutropenia and agranulocytosis

Neural tube defects and spina bifida (spinal cord that does not develop properly and can be seen on the skin above the spinal defect

1500/μL

Thyroid stimulating hormone (TSH)

Serum creatinine and blood urea nitrogen (BUN)

Pregnancy test

Electrocardiogram (ECG) for patients older than 50

Discontinue clozapine (Clozaril) with an ANC less than 1000/μL due to neutropenia

Discontinue clozapine (Clozaril) with a WBC of 2000-3000 per mcL due to agranulocytosis

What should the PMHNP do if a patient taking clozaril is having signs of sudden fever, chills, sore throat, weakness?

If a manic female patient is also promiscuous or hypersexual, the provider should...

Folic acid =

It is important to recommend that all women planning or capable of becoming pregnant take...

Recommend folic acid because of the chance she could become pregnant

D/c medication and check lab values. These are signs of an infection

Supports neural tube development during the first trimester of pregnancy

0.4 to 0.8 mg of folic acid daily