

Psychiatry Medications

| Drug | Indication | MOA | Side Effects | Notes |
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| Antipsychotics | | | | |
| 1st generation - Chlorpromazine - Haloperidol. | Functional psychosis: - Schizophrenia. - Schizoaffective disorders. - Schizophreniform disorder. - Brief psychotic disorder. - Mania (Chlorpromazine “sedative”). - Postpartum psychosis. - Psychosis with depressed mood. - Delusional disorders. - Delirium. - Resistant schizophrenia (Clozapine). - Bipolar Mood Disorder. Organic psychosis: - Psychosis induced by meds (corticosteroids). | - High blockade of dopamine receptors type 2 (D2) in the mesolimbic pathway → reduces active psychotic features. | Antidopaminergic: - Nigrostriatal tract → EPSE (Acute dystonia, parkinsonism, akathisia, rabbit syndrome, tardive dyskinesia) → treat with anticholinergic. - Tuberoinfundibular tract → hyperprolactinemia (gynecomastia and amenorrhea). - Mesocortical tract → lack of motivation, ↓ concentration. Anticholinergic: - Dry mouth, constipation, urinary retention, poor erection, blurred vision, closed-angle glaucoma. Antiadrenergic: - Postural hypotension. - Inhibition of ejaculation. Antihistaminergic: - Sedation and weight gain. Prolonged QT In ECG. | - Don't treat amenorrhea with dopaminergic medications (Bromocriptine) in psychotic females. - Quetiapine = Atypical antipsychotic has no effect on prolactin → doesn't cause amenorrhea Neuroleptic Malignant Syndrome → reaction to antidopaminergics - Features: Muscle rigidity, sweating, hyperthermia, akinesia, clouding consciousness. - Labs → ↑ CPK, ↑ potassium, neutrophilia. - Treatment Medical ICU”. bromocriptine to reduce the risk of acute renal failure that may result from ↑ myoglobin. |
| 2nd Generation - Olanzapine - Quetiapine - Clozapine - Risperidone - Paliperidone | - Delirium and dementia. - Violence/aggression, agitation, and excitement. - Agitation induced by alcohol intoxication. | - Blockade of 5HT A2 in the mesocortical tract → ↑ dopamine function (5HT inhibits dopamine) → improve negative symptoms of psychosis: ↓ initiation, lack of motivation. | - Mesolimbic > Nigrostriatal → Less EPSE, antiadrenergic, anticholinergic. - High risk of metabolic syndrome. - Agranulocytosis (Clozapine). - Hyperprolactinemia (Risperidone). | |
| 3rd Generation. Dopamine System Stabilizers - Aripiprazole | - Amphetamine intoxication (Olanzapine) | - Partial D2 agonist; in mesolimbic it competes with dopamine → less active symptoms | - Agitation, anxiety, insomnia, dyspepsia, nausea, seizures. | - Doesn't increase weight and is usually non-sedating. |
| DEPOT | - Poor compliance patients. | - | - | - IM injections , (slow release) |

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| Electroconvulsive therapy "ECT" | <ul style="list-style-type: none"> - Schizophrenia (catatonic, resistant to drugs). - Depressive disorder with suicidal risk or delusions. - Depressive stupor or marked retardation. - 1st trimester of pregnancy. - Elderly. - Renal failure. - Postpartum psychosis. - Schizoaffective disorder. - Mania & mixed affective states. | <ul style="list-style-type: none"> - ECT Procedure: - Bilateral (most common) → fronto-temporal position. - Unilateral → less memory impairment but less effective. | <ul style="list-style-type: none"> - Headache (due to ↑ ICP). - Body aches and myalgias (due to muscle contraction) - Memory impairment (due to neuronal hypoxia during seizure). - Mania in susceptible depressed patients. - Bone fracture and tongue or lip injury. | <p>Psychiatric disorders that may show deterioration or no response to ECT:</p> <ul style="list-style-type: none"> - Phobic disorders. - Conversion disorder. - Primary hypochondriasis - Depersonalization disorder. <p>Contraindications:</p> <ul style="list-style-type: none"> - ↑ ICP (Absolute) - Cardiac infarct < 3 months. - Arrhythmias. - Hx of cerebral infarction. - Brain tumor. |

ANTIDEPRESSANTS

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| <p>SSRIs:</p> <ul style="list-style-type: none"> - Paroxetine - Fluoxetine - Citalopram - Escitalopram - Sertraline - Fluvoxamine | <ul style="list-style-type: none"> - Depressive disorders. - GAD → Fluoxetine, Venlafaxine. - Social phobia → Fluoxetine, Venlafaxine. - Panic disorders → Paroxetine. - OCDs. - Trichotillomania. - Tic disorders. - Premature ejaculation (SSRI). - Post stroke depression (Citalopram). | <ul style="list-style-type: none"> - Selectively inhibit serotonin reuptake into presynaptic neuron. | <ul style="list-style-type: none"> - Sexual dysfunction (delayed orgasm). - Insomnia (Fluoxetine). - Sedation (Fluvoxamine). - Prolong bleeding time by inhibiting platelet aggregation → ↑ risk of stroke. - Hyponatremia (paroxetine) - Withdrawal syndrome (paroxetine). - Serotonin syndrome; due drugs combination with MOAIs (which inhibit the catabolism of serotonin) Features → myoclonus, nystagmus, tremor, and hyperpyrexia. | <ul style="list-style-type: none"> - Relatively safe in overdose. - Treatment of OCD often requires high doses of SSRIs. - Play good role in controlling blood sugar in DM. - Citalopram = effective in Post-Stroke depression but may increase the bleeding tendency. |
| <p>SNRIs:</p> <ul style="list-style-type: none"> - Venlafaxine. - Desvenlafaxine - Duloxetine. | | <ul style="list-style-type: none"> - Selective-Serotonin-Norepinephrine Reuptake Inhibitors | <ul style="list-style-type: none"> - Dry mouth, anorexia, asthenia, blurred vision, - Abnormal ejaculation or orgasm. - Erectile disturbances. - Sweating - ↑ BP (Venlafaxine > 225 mg). | <ul style="list-style-type: none"> - Higher rates of remission. - Desvenlafaxine has fewer side effects. - Duloxetine has positive benefits in neuropathy in DM. |

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| Mirtazapine | - Depression + insomnia (highly sedating). | - ↑ NE and 5HT. | - ↑ Appetite. - Weight gain. - Sedation. | - Combined with SSRIs or venlafaxine to counteract serotonergic side effects (nausea, agitation & insomnia). |
| Bupropion | - Antidepressant. | - Norepinephrine and dopamine reuptake inhibitor. | - Dry mouth, constipation. - Weight loss. - HTN. | - Combined with SSRIs or venlafaxine to counteract sexual side effects (delayed ejaculation), sedation, weight gain. |
| TCAs: - Amitriptyline. - Imipramine. - Clomipramine. | - Depressive disorders. - Anxiety, phobic. - Panic disorders. - OCDs (Clomipramine). - Nocturnal enuresis (imipramine). - Depression in RA patient (Amitriptyline). - Pruritus (H1 blockade e.g. doxepin). - Gastric ulcer (H2 blockade e.g. amitriptyline). | - Tricyclic Antidepressants | - Anticholinergic; urinary retention, impaired visual accommodation, glaucoma. Delirium. - Antiadrenergic: Postural hypotension , delayed ejaculation and drowsiness. - Sweating, weight gain, arrhythmia, tremor. - Mania in susceptible patients. | - If a patient has insomnia, (amitriptyline or doxepin) - Tricyclics are avoided in suicidal patients and cardiac patients. - Can be given in the 2 nd and 3 rd trimester of pregnancy. |
| Monoamine Oxidase Inhibitors (MAOIs) | - Patients who have not responded to other antidepressants. - Atypical depression - Phobic and panic disorders. - Narcolepsy. | - | - Interactions with tyramine – containing foodstuffs. - Sexual dysfunction. - Headache/ Dizziness/ Tremor. - Sleep disturbances. Weight gain - Ankle edema. - Hepatotoxicity. - Hypertensive crisis. | - Patients shouldn't start another type of antidepressant for at least a two- week after last dose of any MAOI - Moclobemide (RIMA) --> freedom from tyramine reactions and its better tolerated. |

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| MOOD STABILIZERS | | | | |
| LITHIUM | <ul style="list-style-type: none"> - Bipolar Mood Disorder. - Prophylaxis in recurrent unipolar depression. | <ul style="list-style-type: none"> - Stabilizes neuronal activities. | <ul style="list-style-type: none"> - Fine tremor, Metallic taste. - Fatigue /Weight gain. - Renal complications. - Reversible hypothyroidism and nephrogenic diabetes insipidus. - Fetal cardiac anomalies (1st tri). | <ul style="list-style-type: none"> - Labs → RFT,electrolytes / TFT/ ECG/ Pregnancy test - Drug interactions → Thiazide/ NSAID/ACEi. - May potentiate the effect of muscle relaxants. Plasma concentrations: - 0.9 - 1.2 (acute phase). - 0.4 - 0.8 (prophylaxis). |
| Carbamazepin | <ul style="list-style-type: none"> - Not responsive to lithium. - Acute mania - Prophylaxis, - Controlling impulsive and aggressive behavior in persons who are not psychotic. | - | <ul style="list-style-type: none"> - CNS (sedation, vertigo, blurred vision and ataxia). - SIADH. - hepatitis, pancreatitis, serious skin reactions (Stevens-Johnson syndrome). - Agranulocytosis and aplastic anemia. | <ul style="list-style-type: none"> - ↓ serum concentrations of numerous drugs (OCP, warfarin, haloperidol, valproate) |
| Valproate | <ul style="list-style-type: none"> - Manic episode with mood and schizoaffective disorders. | - | <ul style="list-style-type: none"> - CNS (sedation, drowsiness, dysarthria, and ataxia). - Hepatotoxicity, pancreatitis. - Fetal neural tube defects (spina bifida). | - |
| Anxiolytics | | | | |
| Benzodiazepine short acting: <ul style="list-style-type: none"> - Alprazolam - Lorazepam. | <ul style="list-style-type: none"> - Panic disorder (for rapid onset). - Social phobia (small doses). - Specific phobia (before exposure session). - OCD, ASD, PTSD. - Conversion disorder (Diazepam). - Alcohol detoxification (long acting) | <ul style="list-style-type: none"> - They act on benzodiazepine receptors which linked with GABA receptors in the C.N.S → ↑ GABA action which has an inhibitory effect. | <ul style="list-style-type: none"> - Dizziness and drowsiness. - Release of aggression. - Dependence and withdrawal (Short acting). - Intoxication (Similar to alcohol): slurred speech -incoordination ... | DC 2-3 weeks in detoxification to prevent dependency. Withdrawal Syndrome: <ul style="list-style-type: none"> - 2 – 3 days after cessation of short acting. - 7 days after cessation of long acting. |
| Benzodiazepine Long acting <ul style="list-style-type: none"> - Diazepam. - Clonazepam. | | | | |

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| Bupirone | - GAD. | - Stimulates 5HT – 1A receptors and reduces 5HT (serotonin) transmission. | - Headache. - Irritability. - Nervousness. - Lightheadedness. | - Gradual onset of action (days – weeks) → not effective on (as required) basis. - It doesn't lead to dependence. |
| Beta Blockers - Propranolol | - Social phobia. - Specific phobia (before exposure session). - GAD - Neuroleptic-induced akathisia - Lithium-induced postural tremor. - Control of aggressive behavior. | - 30-60 minutes before the anxiety-provoking situation | - Depression. | Caution in patients with: - Asthma - Insulin- dependent diabetes. - Cardiac diseases. - Propranolol = uterine contraction |

Cognitive enhancing medications

| Class | Drug | Indication | MOA | Side Effects | Notes |
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| Cholinesterase Inhibitors | - Donepezil | - All stages of Alzheimer's | - | - Diarrhea, weight loss - Bradycardia, syncope | - |
| | - Rivastigmine - Galantamine | - Mild to moderate Alzheimer's | - | - Anorexia, fatigue, somnolence, dizziness | - Rivastigmine is available as skin patches |
| NMDA receptor antagonist | - Memantine (Ebix) | - Mild to moderate Alzheimer's - Lewy body dementia | - It acts on the glutamatergic system by blocking NMDA receptors to protect neurons from neurodegenerative process induced by glutamate excitotoxicity | - Confusion, dizziness, drowsiness, headache, insomnia, agitation, hallucinations - Less common: anxiety, hypertonia, cystitis, increased libido | - |

Substance Abuse

| Class | Drug | Intoxication | Withdrawal | Treatment | Notes | |
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| CNS Suppressants | Alcohol | <ul style="list-style-type: none"> - Emotional lability - Irritability - Incoordination - Apathy - Ataxia - slurred speech, - Alcoholic coma (>300 mg/ml) | <p>Stage I (6-8h):</p> <ul style="list-style-type: none"> - Autonomic hyperactivity: tremors, tachycardia.. <p>Stage II (10-30h):</p> <ul style="list-style-type: none"> - Hallucinations <p>Stage III (12-48h):</p> <ul style="list-style-type: none"> - Grand mal seizures <p>Stage IV (2-3 days):</p> <ul style="list-style-type: none"> - Delirium Tremens: Delirium, autonomic & electrolytes disturbance, dehydration. - Worsens at night. | <p>Conscious patient:</p> <ul style="list-style-type: none"> - Observation & support - Agitation, hyperactivity: Haloperidol <p>Unconscious patient:</p> <ul style="list-style-type: none"> - Hospitalization - Protection of airway, - Forced diuresis & alkalization of urine <p>Detoxification:</p> <ul style="list-style-type: none"> - Benzodiazepines (diazepam, Chlordiazepoxide) <p>Delirium Tremens:</p> <ul style="list-style-type: none"> - Admission in ICU, benzodiazepines +/- Mg sulfate, rehydration, Thiamine (B1) → glucose metabolism. | <ul style="list-style-type: none"> - Give vitamin B1 (thiamine). - Anticonvulsants for seizures - Disulfiram (antabuse): blocks oxidation of alcohol causing accumulation of acetaldehyde: flushing, choking sensation, headache, N/V, tachycardia, anxiety. - (Citrate Calcium Carbimide can be used) - Screening: CAGE | |
| | Sedatives | <ul style="list-style-type: none"> - Benzodiazepines - Zolpidem, zopiclone | <ul style="list-style-type: none"> - Slurred speech - Incoordination - Unsteady gait - Nystagmus - Impaired attention | <ul style="list-style-type: none"> - Autonomic hyperactivity - N/V, anorexia - Insomnia - Perceptual disturbance - Seizures, delirium | - | <ul style="list-style-type: none"> - A patient should not be deprived of a benzodiazepine drug when it is clinically indicated. (insomnia, anxiety, akathisia) |
| | Inhalants | Aromatic hydrocarbons (acetone, benzene, toluene) | <ul style="list-style-type: none"> - Small doses: euphoria, excitement, pleasant floating sensation, disinhibition. - High doses: disturbed consciousness, impulsiveness, ataxia, nystagmus. | - | <ul style="list-style-type: none"> - Treat psychiatric complications. - Education. | <ul style="list-style-type: none"> - Inexpensive, legal. - Symptoms: unusual breath, rash around nose & mouth, residues. - Complications: multi-organ damage, depression, respiratory depression, aspiration, cardiac arrhythmia. |

| | Class | Drug | Intoxication | Withdrawal | Treatment |
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| | Opioids Opium, heroin, morphine, codeine, pethidine, methadone | <ul style="list-style-type: none"> - Euphoria, analgesia, relaxation - Apathy, dysphoria, drowsiness, slurred speech, ↓ sexual desire. - Pupillary constriction (pupillary dilatation occurs in severe overdose) | <ul style="list-style-type: none"> - Rhinorrhea - Lacrimation - Pupillary dilatation - Yawning, insomnia - Fever, sweating - Muscle/joint ache - N/V, Diarrhea - Dysphoric mood - Craving | <p>Intoxication:</p> <ul style="list-style-type: none"> - ICU, Open airway, O2, fluids - Antidote (Naloxone) <p>Withdrawal:</p> <ul style="list-style-type: none"> - Short term: painkillers, sedatives, observation, Clonidine. - Long term: Methadone harm reduction strategies (methadone patches can be used for heroin addicts) | <ul style="list-style-type: none"> - Interaction with endogenous opioids (enkephalins, endorphins and dynorphins) and opiate receptors (mu, kappa and delta). - Heroin may cause vein thrombosis, PE - Tolerance may develop & diminish rapidly (6h): withdrawal is not fatal but taking a large dose can cause respiratory arrest. |
| CNS Stimulants | Amphetamine (captagon) | <ul style="list-style-type: none"> - Hypervigilance - Overconfidence - Aggression - Insomnia | - | <ul style="list-style-type: none"> - Antipsychotic medications (Olanzapine) - Antidepressants | <ul style="list-style-type: none"> - It can be indistinguishable from functional psychosis - Positive finding in urine screen |
| | Cocaine (crack) | <ul style="list-style-type: none"> - Euphoria - Hallucinations | | | |
| Cannabis | <ul style="list-style-type: none"> - Marijuana - Hash - Hashish | <ul style="list-style-type: none"> - Euphoria, Dry mouth - Red conjunctiva - Mild tachycardia - ↑ Appetite, Brief psychosis. - Impaired cognitive functions - Anxiety +/- depersonalization & derealization. | <ul style="list-style-type: none"> - Depressive features | <ul style="list-style-type: none"> - Outpatient - Antipsychotic medications | <ul style="list-style-type: none"> - Chronic use of cannabis can lead to a state of apathy and amotivation (amotivation syndrome) |

- TB treatments (INH, cycloserine) can cause many psychiatric disorders
- Antihypertensive (beta blocker), steroids, chemotherapy may induce depression
- Amitriptyline is used to treat depression, anxiety, and pain symptoms in rheumatoid arthritis.
- Interferon therapy for hepatitis C can cause severe depression and suicidal ideation.
- Pethidine (narcotic) = addicted in SCA

| Neurotransmitter | Diseases | Notes |
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| Serotonin - Raphe nuclei. - L-tryptophan. - Metabolized by MAO-A | - Anxiety - Depression - Bulimia nervosa - OCD | 5HT1: Frontal cortex → impulsive behaviour and anxiety 5HT2A: 1- Basal ganglia → movement . 2- Brainstem → deep sleep . 3- Spinal cord → sexual responses and orgasm . 5HT2A-C: Limbic system → anxiety and panic feelings . 5HT3: 1- Brainstem chemoreceptors → vomiting . 2- Hypothalamus → weight gain and appetite . <u>Peripheral serotonergic receptors 3,4 and 7</u> Intestinal secretion |
| Dopamine - From tyrosine - D1> -ve symptoms - D2 blockade produces parkinsonian like effects so motor. | Schizophrenia | - Mesolimbic path: Reward system → positive symptoms of schizophrenia → nucleus accumbens → reinforcement is achieved through the effects of nicotine, caffeine and CNS stimulants - Mesocortical path: Cognition and mental arousal → negative symptoms of schizophrenia a. Pathological causes of this path could be due to → Dopamine neuron defect, Glutamate excitation, Serotonin overactivity. - Nigrostriatal: Motor and parkinsonian like symptoms - Tuberoinfundibular: Production of prolactin |
| Noradrenaline - Hydroxylation of dopamine from Locus Ceruleus | - Ejaculation and orgasm through the sympathetic system - Stimulation of immune system in low doses and inhibition in high doses | 1- Frontal cortex: <ul style="list-style-type: none"> Mood through Beta 1 receptors Cognition through Alpha 2 receptors 2- Limbic system 3- cerebellum 4- cardiovascular |
| ACH - Nucleus basalis of meynert. | - Erection through parasympathetic system - Other activators include NO | |
| GABA - Synthesized by glutamate | Suppresses seizure activity, anxiety and mania | Inhibitory exclusively found in the brain |
| Glutamate - Synthesized by glutamine | Neuronal degeneration in chronic schizophrenia with negative features | - Excitatory neurotransmitter - Sigma receptors 1&2 are related to glutamate receptors NMDA and involved in <u>enhancement of memory and cognition</u> and hence when fluvoxamine is used it alleviates the negative symptoms in schizophrenia |

| Neurotransmitter | Diseases | Notes |
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| Substance P | <ul style="list-style-type: none"> - Initiation of pain. - Migraine. - Cluster headaches. - Chronic pain. - Huntington's disease. - Mood disorders | Excitatory neurotransmitter |
| Melatonin - Pineal gland | Sleep wake cycle | |
| Histamine - Hypothalamus | Allergies | <ul style="list-style-type: none"> - H1- arousal and appetite. - H2- gastric ulcer. |
| Endogenous opioids | Pain | Learning , memory , mood and perception of pain |

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| CBT | <ul style="list-style-type: none"> - Panic disorders. - Agoraphobia. - Social phobia. - GAD. - Acute stress disorder. - Adjustment disorder crisis intervention. |
| Behavioural therapy | <ul style="list-style-type: none"> - Social phobia. - Thought stopping OCD. - Relaxation for anxiety. - Exposure (with desensitization and flooding). - Token economy for chronic schizophrenia - Assertiveness training for dependant and avoidant personality |
| Psychodynamic | - Patients behaviour is determined by an unconscious process (personality disorders, anxiety or chronic depression) |
| Martial | <ul style="list-style-type: none"> - Problem solving - Behavioural - Dynamic |