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| **Drug** | **Examples** | **Mechanism** | **Uses** | **Side effects** |
| **Opioids** | MorphineFentanylCodeineLoperamideMethadoneMeperidineDextromethorphanDiphenoxylate | **Opioid receptor agonist**(delta, kappa, mu)**Open K+, close Ca2+**(decr. AP transmission)Inhibit release of:ACh, Substance P,Glutamate, NE, 5-HT | **Pain****Cough suppression**(dextromethorphan)**Diarrhea**(loperamide, diphenoxylate)Acute pulmonary edema**Heroin maintenance**(methadone) | Addiction**Respiratory depression****Constipation****Miosis**Tolerance(not to constipation/miosis)Treat w/ **naloxone, naltrexone**(opioid antagonists) |
| Pentazocine | Kappa agonistMu antagonist | Moderate-severe pain | **Opioid withdrawal**(if taking full antagonist) |
| Butorphanol | Kappa agonistMu partial agonist | Severe pain**Less respiratory depression**(than full agonist) | Opioid withdrawal(if taking full agonist)**Overdose not reversed easily** |
| Tramadol | **Very weak agonist****Inhibit 5-HT, NE reuptake** | Chronic pain | **Decreases seizure threshold****Serotonin syndrome** |
| **Barbituates** | PhenobarbitalPentobarbitolThiopentalSecobarbital | Bind GABA Cl- channel**Incr. duration** of openingHyperpolarize neuron | **Sedative** for:Anxiety, insomniaSeizuresInduce anesthesia | **Contraindicated in porphyrias**CV/CNS/pulm depression**P450 inducer**Treat w/ supporting respiration |
| **Benzodiazepines** | DiazepamLorazepamTriazolamTemazepamOxazepamMidazolamChlordiazepoxideAlprazolam | Bind GABA Cl- channel**Incr. freq.** of openingHyperpolarize neuron | AnxietySpasticity**Status epilepticus****Eclampsia****Alcohol withdrawl**Night terrorsSleepwalkingGeneral anesthetic**Hypnotic** (insomnia) | Dependence**CNS depression w/ alcohol**Less pulm depression than barbituatesTreat w/ **flumazenil** (can precip. seizures) |
| **Nonbenzo-****Hypnotics** | ZolpidemZaleplonEszopiclone | Bind **GABA** channel(**BZ1 subtype**)**Less psychomotor depress.****Less amnesia****Less dependence risk** | **Insomnia**(sleep cycle less affected than w/ benzos) | **Ataxia**HeadachesConfusionTreat w/ **flumazenil** |

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| **Drug** | **Mechanism** | **Uses** | **Side effects** |
| **Ethosuximide** | Block **Ca2+** channels(thalamic T-type) | **Absence** | Urticaria**Stevens-Johnson syndrome**Fatigue, headache, GI issues |
| **Benzodiazepines** | Increase **GABA** action | **Status epilepticus****Eclampsia** | SedationToleranceDependenceRespiratory depression |
| **Phenobarbital** | Increase **GABA** action | Focal seizuresTonic-clonic**First line in neonates** | SedationToleranceDependenceCV/pulm depression**P450 inducer** |
| **Phenytoin****Fosphenytoin** | Blocks **Na+** channels**Zero order kinetics** | **Tonic-clonic (first line)****Status epilepticus (prophylaxis)**Focal seizures | **Peripheral neuropathy, nystagmus**, diplopia, sedation**Stevens-Johnson syndrome, gingival hyperplasia****DRESS** (drug reaction w/ eosinophilia & systemic symptoms)**SLE-like syndrome**, osteopenia**Megaloblastic anemia**Teratogenic (**fetal hydantoin syndrome**)**P450 inducer** |
| **Carbamazepine** | Block **Na+** channels | **Focal seizures (first line)**Tonic-clonic**Trigeminal neuralgia** | **Agranulocytosis, aplastic anemia**Liver toxicity, **P450 inducer****Teratogenic****SIADH**, diplopia, ataxia**Stevens-Johnson syndrome** |
| **Valproic acid** | Block **Na+** channelsBlock **GABA** transaminase | **Tonic-clonic (first line)****Absence**Focal seizures**Myoclonic****Bipolar, migraine prophylaxis** | **Hepatotoxic** (fatal, measure LFTs)**Pancreatitis**, GI distress**Neural tube defects** (contraindicated in pregnancy)Tremor, weight gain |
| **Vigabatrin** | Block G**ABA** transaminase | Focal seizures |  |
| **Gabapentin** | Block **Ca2+** channels | Focal seizures**Peripheral neuropathy****Postherpetic neuralgia** | Sedation, ataxia |
| **Topiramate** | Block **Na+** channelsIncrease **GABA** action | Focal seizuresTonic-clonic | **Kidney stones**Sedation, weight loss, mental dulling |
| **Lamotrigine** | Block **Na+** channels | Focal seizuresTonic-clonic**Absence** | **Stevens-Johnson syndrome****(titrate slowly)** |
| **Levetiracetam** | Modulate **GABA** releaseModulate **glutamate** release | Focal seizuresTonic-clonic |  |
| **Tiagabine** | Block **GABA** reuptake | Focal seizures |  |

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| **Drug** | **Examples** | **Mechanism** | **Side effects** |
| **a-agonists** | Epinephrine (a1)Brimonidine (a2) | Decr. humor synthesis(**vasoconstriction**) | **a1: mydriasis**(not for closed-angle)Blurry vision, **hyperemia****Foreign body sensation**Allergic reaction, pruritis |
| **B-blockers** | TimololBetaxololCarteolol | Decr. humor synthesis | No pupillary/vision changes |
| **Diuretics** | Acetazolamide | Decr. humor synthesis(**inhibits carbonic anhydrase**) | No pupillary/vision changes |
| **Direct****Cholinomimetics** | PilocarpineCarbachol | Incr. humor outflow(**ciliary muscle contraction**)(opens trabecular meshwork**Pilocarpine opens canal of Schlemm** | **Miosis** (pupil sphincter contraction)**Cyclospasm** (ciliary muscle contraction) |
| **Indirect****Cholinomimetics** | PhysostigmineEchothiophate |
| **Prostaglandins** | BimatoprostLanatoprost | Incr. humor outflow | **Darkens iris****Eyelash growth** |

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| **Drug** | **Mechanism** | **Uses** | **Side Effects** |
| **Memantine** | **NMDA antagonist**Prevent excitotoxicity | Alzheimer | HallucinationsDizzinessConfusion |
| **Donepezil****Galantamine****Rivastigmine****Tacrine** | **AChE inhibitors** | Alzheimer | InsomniaNauseaDizziness |
| **Tetrabenazine****Reserpine** | **Inhibit VMAT**Decr. dopamine release | Huntington(also use haloperidol) |  |
| **Riluzole** | **Decr. glutamate toxicity** | ALS |  |
| **Sumatriptan** | **5-HT1B/1D agonists**Inhibit trigeminal nerveCause vasoconstriction | **Acute migraines****Cluster headaches** | **Coronary vasospasm**(contrain. in CAD, Prinzmetal)Mild paresthesia |

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| **Drug** | **Examples** | **Mechanism** | **Uses** | **Side effects** |
| **Ergot dopamine agonists** | Bromocriptine | Increase dopamine | Parkinson**Restless leg syndrome** |  |
| **Non-ergot****Dopamine agonists** | PramipexoleRopinirole |
| **Increase dopamine** | Amantadine | Incr. dopamine releaseDecr. dopamine reuptake | Parkinson | **Livedo reticularis**Ataxia |
| **Levodopa** | L-DOPACarbidopa | **Block peripheral conversion**(inhibits DOPA decarboxylase)**Reduce side effects** (nausea) | Parkinson | ArrhythmiasDyskinesia (on dose)Akinesia (off dose) |
| **COMT-inhibitors** | EntacaponeTolcapone | Inhibit **peripheral** COMT(prevent peripheral breakdown)Inhibit **peripheral/central** COMT(incr. dopamine levels) | Parkinson |  |
| **MAO inhibitors** | Selegiline | Inhibit **MAO-B** | Parkinson | Enhance L-dopa side effects |
| **Anticholinergic** | Benztropine | **Antimuscarinic** | Improve tremor, rigidity**No effect on bradykinesia** |  |

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| **Drug** | **Examples** | **Mechanism** | **Effects/Uses** | **Side effects** |
| **Inhaled anesthetics** | DesfluraneHalothaneEnfluraneIsofluraneSevofluraneMethoxyfluraneN2O | Unknown | CV/pulm depressionNausea/emesisIncr. cerebral blood flow(via decr. metabolism) | **Halothane: hepatotoxic****Methoxyflurane: nephrotoxic****Enflurane: proconvulsant****N2O: expansion of trapped gas****Malignant hyperthermia**(induce fever, contractions)Treat w/ dantrolene |
| **Intravenous anesthetics** | Barbituates | Incr. GABA action**Rapidly redistributes in tissues**(quickly terminates effects) | **Anesthesia induction**Short procedures | Sedation, tolerance, dependenceCV/pulm depression**P450 inducer** |
| Benzodiazepines | Incr. GABA action | **Endoscopy**Decr. BPAnterograde amnesia | Severe respiratory depression |
| Ketamine | **Block NMDA receptor**(PCP analog) | **Dissociative anesthetic****CV stimulant**Incr. cerebral blood flow | Disorientation**Hallucination****Bad dreams** |
| Propofol | Potentiates **GABAA** | ICU sedation (**rapid induction**)Less postop nausea |  |
| Opioids | Bind opioid receptors | General anesthesia(morphine, fentanyl) | Respiratory depression**Constipation, miosis** |
| **Local anesthetics** | ProcaineCocaineTetracaineBenzocaine | Block Na+ channelsMost effective w/ rapid firing | **Minor surgeries**Use amides for ester allergies**Given w/ vasoconstrictors**(decr. bleeding)**Less effective in infected tissues**(require alkaline environment)Block small/myelinated first | **Bupivacaine: CV toxicity****Cocaine: arrhythmias****Benzocaine: methemoglobinemia****Hyper/hypo-tension****CNS excitation** |
| LidocaineMepivacaineBupivacaine |
| **Depolarizing****NM blockers** | Succinylcholine | **Strong ACh agonist****Phase 1: sustained depolarization (no antidote)****Phase 2: desensitize receptors (reversed by AChE inhibitors)** | Surgical muscle paralysisMechanical ventilation**Selective for motor nicotinics** | **Hypercalcemia****Hyperkalemia****Malignant hyperthermia** |
| **Nondepolarizing****NM blockers** | TubocurarineAtracuriumMivacuriumPancuroniumVecuroniumRocuronium | **Competitive ACh antagonist** | Reverse w/:**Neostigmine (give w/ atropine)**EdrophoniumOther AChE inhibitors |
| **Dantrolene** | **Bind ryanodine receptor,** prevent Ca2+ release from SR | **Malignant hyperthermia****Neuroleptic malignant syndrome** |  |
| **Baclofen** | Activate **GABAB** in spinal cord, induce muscle relaxation | **Muscle spasms** |  |
| **Cyclobenzaprine** | **Skeletal muscle relaxant** (central acting) | **Muscle spasms** | **Anticholinergic effects** (similar to TCAs) |