Neuro.Wiki

AED SIDE EFFECTS

Anti-seizure drug mechanism, indications, key side effects, clinical pearls, metabolism, and pregnancy category. **Red = the most important (dangerous) effects.** Indications: P = partial, G = generalized, A = absence, M = myoclonic.

Drug & MOA	Indications	Key side effects	Clinical pearl	Metabolism	Preg
First-generation					
Carbamazepine Na-channel blocker	P, G	**SJS/TEN (HLA-B*1502)** Heme: **aplastic anemia**, leukopenia Neuro: nystagmus, dizziness, diplopia Hyponatremia; teratogenic (NTD)	Test HLA-B*1502 in Asians first; auto-induction → levels drop over 2–4 wk.	Hepatic (auto-induction)	D
Ethosuximide T-type Ca-channel blocker	A	Neuro: drowsiness, headache GI: N/V, hiccups Heme: **aplastic anemia**, leukopenia	First-line for absence; no effect on tonic-clonic.	Hepatic	D
Valproate ↑GABA; Na/Ca-channel; HDAC inhibitor	P, G, A, M	GI: **hepatotoxicity (<2 y)**, **pancreatitis**, ↑ammonia **Teratogenic (NTD, ↓IQ)** Heme: thrombocytopenia Weight gain, PCOS, alopecia, tremor	Broadest spectrum; avoid in women of childbearing age; check LFTs/ammonia.	Hepatic	X
Phenytoin Na-channel blocker	P, G (not absence)	CV: **hypotension/arrhythmia (IV)** Skin: **SJS/TEN**; gingival hyperplasia, hirsutism Neuro: ataxia, nystagmus, tremor Fetal hydantoin syndrome	Zero-order kinetics — small dose ↑ → big level ↑; correct level for albumin.	Hepatic (zero-order)	D
Phenobarbital GABA-A agonist	P, G, M	**Respiratory depression / dependence** Neuro: sedation; hyperactivity (kids) Heme: megaloblastic anemia; vit-K coagulopathy	Neonatal seizures first-line; potent enzyme inducer.	Hepatic	D
Second-generation					
Gabapentin α2δ Ca-channel binding	P (adjunct)	**DRESS**, angioedema Neuro: sedation, dizziness, ataxia Behavioral (kids); leg edema	Renally cleared, no interactions; also for neuropathic pain.	Renal	C
Topiramate Na-channel; ↑GABA; ↓AMPA; CA inhibitor	P, G, M	Renal: kidney stones; **metabolic acidosis** Eye: **acute glaucoma** Cognitive: word-finding, paresthesia; weight loss; hypohidrosis (kids)	Bonus: migraine prophylaxis + weight loss; avoid other CA inhibitors.	Renal (70%)	D
Lamotrigine Na-channel blocker	P, G (± absence)	**SJS/TEN 0.8%** (fast titration / valproate), DRESS Rare: **HLH**, aseptic meningitis Neuro: dizziness, headache, diplopia, insomnia	Titrate SLOWLY (rash); halve dose with valproate; good in pregnancy/mood.	Hepatic (glucuronidation)	D
Levetiracetam SV2A binding	P, G, M	Psych: **irritability, aggression, depression** Neuro: somnolence, asthenia	No interactions + IV load → go-to in status/ICU; watch mood.	Renal	C
Oxcarbazepine Na-channel blocker	P, G	Endo: **hyponatremia (> CBZ)** Skin: SJS/TEN; rash (25% cross-react CBZ) Neuro: dizziness, diplopia, sedation	Check Na; less enzyme induction than CBZ; ~25% rash cross-reactivity.	Hepatic	C
Zonisamide Na/T-Ca channel; CA inhibitor	P, G, M	Skin: **SJS, DRESS (sulfa)** Renal: kidney stones, oligohidrosis, metabolic acidosis Neuro: sedation, cognitive slowing, ataxia	Once-daily; sulfa-allergy caution; weight loss.	Hepatic / renal	D

Drug & MOA	Indications	Key side effects	Clinical pearl	Metabolism	Preg
Tiagabine (Gabitril) GABA reuptake inhibitor	P (adjunct, >12 yr)	**Provokes seizures / NCSE** (overdose, off-label) Neuro: dizziness, tremor, cognitive	Can precipitate NCSE; avoid in non-epileptic patients.	Hepatic	C
Felbamate NMDA antagonist; Na-channel	Refractory (LGS)	**Aplastic anemia (1:5000)** **Hepatic failure (boxed)** GI: anorexia, weight loss, insomnia	Reserved — informed consent + CBC/LFT monitoring.	Hepatic	C
Third-generation					
Lacosamide (Vimpat) Enhances slow Na inactivation	P	CV: **PR prolongation**, AF (in DM) Neuro: dizziness, ataxia, diplopia	Baseline ECG (PR); IV available; well tolerated.	Renal	C
Brivaracetam (Briviact) SV2A (20× affinity vs LEV)	P	Neuro: sedation, dizziness, fatigue Psych: irritability (less than LEV)	Like levetiracetam with less irritability.	Renal	C
Clobazam (Onfi) GABA-A potentiation	LGS (adjunct, >2 yr)	Skin: **SJS/TEN** Neuro: sedation (avoid CNS depressants)	LGS adjunct; less sedation than other benzos.	Hepatic	C
Perampanel (Fycompa) AMPA antagonist	P, G	Psych: **aggression, homicidal/suicidal ideation (boxed)** Neuro: dizziness, gait disturbance, falls	Once-daily at bedtime; counsel re boxed psychiatric warning.	Hepatic	C
Vigabatrin (Sabril) Irreversible GABA-transaminase inhibitor	Infantile spasms (refractory CPS)	**Permanent peripheral vision loss (boxed)** MRI changes / intramyelinic edema (infants) Neuro: sedation	Serial visual-field testing (REMS); first-line for infantile spasms in TSC.	Renal	D
Rufinamide (Banzel) Prolongs Na inactivation	LGS	CV: **shortened QT** (avoid familial short-QT) Neuro: dizziness, somnolence, ataxia	LGS; take with food; check QTc.	Hepatic	C
Eslicarbazepine (Aptiom) Na-channel blocker	P	Endo: **hyponatremia** Neuro: dizziness, diplopia Skin: rash (like oxcarbazepine)	Once-daily, oxcarbazepine-like; check Na.	Hepatic	C
Newest agents (2018+)					
Cannabidiol (Epidiolex) GPR55 / TRPV1 / adenosine modulation	LGS, Dravet, TSC	**Hepatotoxicity (↑LFTs)** Neuro: somnolence; GI: diarrhea, ↓appetite Interaction: ↑ with clobazam / valproate	Monitor LFTs; ↑ clobazam active metabolite.	Hepatic (CYP3A4/2C19)	—
Cenobamate (Xcopri) Persistent Na current + GABA-A modulator	P (adults)	**DRESS/DIHS** (slow titration) **QT shortening** Neuro: somnolence, dizziness, diplopia	Very slow titration to avoid DRESS; highly effective for focal.	Hepatic	—
Fenfluramine (Fintepla) Serotonin releaser; 5-HT / sigma-1	Dravet, LGS	**Valvulopathy & pulmonary HTN (REMS echo)** ↓appetite, somnolence, fatigue	Baseline + q6-month echo (REMS); very effective in Dravet.	Hepatic	—
Ganaxolone (Ztalmy) Neuroactive steroid; GABA-A modulator	CDKL5	Neuro: somnolence, sedation Pyrexia	For CDKL5 deficiency disorder.	Hepatic	—

Common to all AEDs: suicidal ideation (OR ~1.8), sedation. **DRESS** = drug reaction with eosinophilia & systemic symptoms. **SJS/TEN** = Stevens-Johnson syndrome / toxic epidermal necrolysis. **CA** = carbonic anhydrase. **Pregnancy:** **X** = contraindicated, **D** = known risk, **C** = risk not excluded, — = no category (PLLR).