TOPIRAMATE

Indication	• Neonatal seizures refractory to other antiepileptic medicines[1] o Consult with paediatric neurology team prior to use

ORAL

Presentation	• Compounded oral solution: 5 mg in 1 mL o Available: Mater Pharmacy Production Services | Central Pharmacy QH • Tablet 25 mg
Dosage	• 2.5–5 mg/kg every 12 hours
Preparation *(oral solution)*	• Shake well
Preparation *(tablet)*	Only if no oral solution available • Disperse tablet in 5 mL water for injection (takes 4–6 minutes) o *Concentration now equal 5mg/mL*
Administration	• Draw up prescribed dose into oral/enteral syringe • Oral/OGT/NGT without regard to feeds

Contraindication Caution	• Contraindication o Previous hypersensitivity reaction o Acute porphyrias[2] • Caution o Hepatic impairment secondary to risk of reduced clearance[2] o Renal impairment: consider reduced dosage[2]
Special considerations	• Multiple efficacious dosages reported. Limited data about efficacy and safety in neonates[3]. Used 'off label'[4] • Half-life is extended during therapeutic hypothermia due to effects on absorption and elimination[3,4] • Reproductive hazard: do not crush, disperse the tablet or open the capsule. Use PPE • Cognitive and neuropsychiatric adverse events and language impairment reported[5]
Monitoring	• Seizure activity
Compatibility	• Not applicable
Incompatibility	• Not applicable
Interactions	• Carbamazepine: increased risk of carbamazepine toxicity, monitor serum carbamazepine levels[2] • Phenobarbital: decrease plasma concentration of topiramate[2], monitor seizure activity • Phenytoin: decreases concentration of topiramate and topiramate increases the concentration of phenytoin[2], monitor seizure activity
Stability	• Tablet o Store at room temperature in original packaging to protect from moisture • Oral solution o Store between 2–8 °C o Discard 4 weeks after opening or as per local infection control policy (limited evidence)
Side effects*	• Blood pathology: anaemia, haemorrhage, hypokalaemia, leukopenia, eosinophilia, thrombocytopenia, metabolic acidosis, hyperammonia • Circulatory: arrhythmias, hypotension, Raynauds phenomenon, peripheral coldness, vasodilation • Digestive: constipation, diarrhoea, vomiting, hepatic disorders, pancreatitis, weight changes • Integumentary: skin reactions, severe cutaneous adverse reactions (SCARs) • Lymphatic: lymphadenopathy, face oedema • Musculo-skeletal: stiffness • Nervous: impaired consciousness, crying, drowsiness, seizures, hyperthermia, anhidrosis, glaucoma, eye inflammation, influenza like illness, pain, dry mouth • Respiratory: dyspnoea, cough, paranasal sinus hypersecretion, nasopharyngitis • Urinary: renal tubular acidosis, nephrolithiasis

Actions	• Broad-spectrum antiepileptic[5] • Enhances GABA inhibitory action at GABA receptors[3] • Modulates glutamate activity at receptor sites and reduces excitation[3] • Animal model data suggest is neuroprotective and, unlike phenobarbital and phenytoin, may not exacerbate apoptosis after a severe hypoxic–ischaemic insult[3]
Abbreviations	• *Side effects associated with long term use • GABA: γ-aminobutyric acid, NGT: nasogastric tube, OGT: orogastric tube, PPE: personal protective equipment, QH: Queensland Health
Keywords	Topiramate, seizures, antiepileptic. AED, epilepsy, neonatal medicine, neonatal monograph,

The Queensland Clinical Guideline *Neonatal medicines*[6] is integral to and should be read in conjunction with this monograph. Refer to the disclaimer. Destroy all printed copies of this monograph after use.

References

1. Merative Micromedex®Neofax®. Topiramate. In: NeoFax®/Pediatrics (electronic version). Ann Arbor, Michigan, USA 2025 [cited 2026 June 26]. Available from: http://www.neofax.micromedexsolutions.com.
2. British National Formulary for Children (BNFC) online. Topiramate. [Internet]: Royal Pharmaceutical Society; September 2024 [cited 2026 June 26]. Available from: https://www.medicinescomplete.com.
3. El-Dib M, Soul JS. The use of phenobarbital and other anti-seizure drugs in newborns. Semin Fetal Neonatal Med 2017;22(5):321-7. doi:10.1016/j.siny.2017.07.008.
4. Yozawitz E, Stacey A, Pressler RM. Pharmacotherapy for seizures in neonates with hypoxic ischemic encephalopathy. Paediatr Drugs 2017;19(6):553-67. doi:10.1007/s40272-017-0250-4.
5. Ainsworth S. Neonatal Forumlary 7: Drug Use in Pregnancy and the First Year of Life. 7th ed. West Sussex: Wiley Blackwell; 2015.
6. Queensland Clinical Guidelines. Neonatal medicines. Guideline No. MN25.54-V2-R30. [Internet]. Queensland Health. 2025. [cited 2026 June 26]. Available from: https://www.health.qld.gov.au/qcg.

Document history

ID number	Effective	Review	Summary of updates
NMedQ21.067-V1-R26	20/07/2021	20/07/2026	Endorsed by Queensland Neonatal Services Advisory Group (QNSAG)
NMedQ21.067-V2-R26	19/05/2022	20/07/2026	Deleted “if therapeutic hypothermia refer to QCG *Neonatal seizures* guideline”
NMedQ26.067-V3-R31	24/07/2026	24/07/2031	Full review. Endorsed by QNSAG • Total daily dose unchanged, • Changed to BD dosing frequency • Added preparation for tablet • Updated presentation, references, compatibilities, incompatibilities, side effects

QR code