

TOPIRAMATE

Indication	<ul style="list-style-type: none"> • Neonatal seizures refractory to other antiepileptic medicines¹
ORAL	Presentation <ul style="list-style-type: none"> • Compounded oral solution: 5 mg in 1 mL <ul style="list-style-type: none"> ◦ Available: Mater Pharmacy Production Services Central Pharmacy QH
	Dosage ^{2,3} <ul style="list-style-type: none"> • 5–10 mg/kg/day <ul style="list-style-type: none"> ◦ May be given as 1 dose or in 2 divided doses
	Preparation <ul style="list-style-type: none"> • Shake well • Draw up prescribed dose into oral/enteral syringe
	Administration <ul style="list-style-type: none"> • Oral/OGT/NGT without regard to feeds
Special considerations	<ul style="list-style-type: none"> • Limited data about efficacy and safety in neonates⁴. Used 'off label'² • Consult with paediatric neurology team prior to use • Cautions <ul style="list-style-type: none"> ◦ Hepatic impairment secondary to risk of reduced clearance⁵ ◦ Renal impairment: consider reduced dosage⁵ • Cognitive and neuropsychiatric adverse events and language impairment reported³
Monitoring	<ul style="list-style-type: none"> • Side effects clinically • Renal function as indicated
Compatibility	<ul style="list-style-type: none"> • Not applicable
Incompatibility	<ul style="list-style-type: none"> • Not applicable
Interactions	<ul style="list-style-type: none"> • Carbamazepine: increased risk of carbamazepine toxicity when given concurrently with topiramate⁵ • Phenobarbital: predicted to decrease the concentration of topiramate⁵ • Phenytoin: decreases concentration of topiramate and topiramate increases the concentration of phenytoin⁵
Stability	<ul style="list-style-type: none"> • Store between 2–8 °C • Discard 4 weeks after opening or as per local infection control policy (limited evidence)
Side effects	<ul style="list-style-type: none"> • Common⁵ <ul style="list-style-type: none"> ◦ Anaemia, constipation, cough, diarrhoea, drowsiness, dry mouth, dyspnoea, fever, gastrointestinal disorders, haemorrhage, nasopharyngitis, pain, seizures, skin reactions, urolithiases, vomiting, weight changes • Uncommon⁵ <ul style="list-style-type: none"> ◦ Anhidrosis, hyperthermia, arrhythmias, consciousness impaired, crying, drooling, dry eye, eosinophilia, facial swelling, hypokalaemia, hypotension, influenza like illness, leukopenia, lymphadenopathy, metabolic acidosis, musculoskeletal stiffness, pancreatitis, paranasal sinus hypersecretion, peripheral coldness, thrombocytopenia, vasodilation • Rare⁵ <ul style="list-style-type: none"> ◦ Eye inflammation, face oedema, glaucoma, hepatic disorders, neutropenia, Raynaud's phenomenon, renal tubular acidosis, severe cutaneous adverse reactions (SCARs), unresponsive to stimuli
Actions	<ul style="list-style-type: none"> • Broad-spectrum antiepileptic³ • Enhances GABA inhibitory action at GABA receptors⁴ • Modulates glutamate activity at receptor sites and reduces excitation⁴ • Animal model data suggest is neuroprotective and, unlike phenobarbital and phenytoin, may not exacerbate apoptosis after a severe hypoxic–ischaemic insult⁴ • Half-life is extended during therapeutic hypothermia due to effects on absorption and elimination^{2,4}
Abbreviations	GABA: γ -aminobutyric acid, NGT: nasogastric tube, OGT: orogastric tube, QH: Queensland Health
Keywords	Topiramate, seizures, antiepileptic. AED, epilepsy



The Queensland Clinical Guideline *Neonatal Medicines* 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. IBM Micromedex®/Neofax®. Topiramate. In: IBM Micromedex® NeoFax®/Pediatrics (electronic version). IBM Watson Health, Greenwood Village, Colorado, USA. 2021 [cited 2021 April 08]. Available from: <http://neofax.micromedexsolutions.com/neofax>.
2. Yozawitz E, Stacey A, Pressler RM. Pharmacotherapy for Seizures in Neonates with Hypoxic Ischemic Encephalopathy. *Paediatr Drugs* 2017;19(6):553-67.
3. Ainsworth S. Neonatal Formulary 7: Drug Use in Pregnancy and the First Year of Life. 7th ed. West Sussex: Wiley Blackwell; 2015.
4. 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.
5. British National Formulary for Children (BNFC) online. Topiramate. [Internet]: Royal Pharmaceutical Society; February 2021 [cited 2021 April 08]. Available from: <https://www.medicinescomplete.com>.

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 <i>Neonatal seizures guideline</i> "

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