



mood stabilizers



References




- Using Lithium Safely - WA Health
- Lithium's Mechanism of Action: An Illustrated Review
- DRUGBANK







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Drug	Mechanism	Adverse effects 	Indications	Additional points																
Lithium 	<p>Promotes GABA-mediated neurotransmission → decrease dopamine & glutamate (increased in mania)</p> <p>Inhibits neurotransmission - decrease dopamine by altering GPCR & decreasing glutamate by inhibiting NMDA receptor → down regulation leads to clinical depression</p> <p>Enhances serotonin release</p> <p>Has little or no psychotic effect in normal individual</p>	<p>“LITHIUM – R”</p> <ul style="list-style-type: none"> • L – leukocytosis • I – insipidus (diabetic – polyuria/ polydipsia) • T – Tremor (fine), Teratogenicity (esp. in 1st trimester), thirsty • H – Hypothyroidism, Hyperparathyroidism, Hypercalcaemia • I – Increased weight • U – Upset stomach (nausea, vomiting, diarrhea) • M – miscellaneous – ECG changes (Ebstein anomaly), acne, muscle weakness, memory impairment, metallic taste • R – Renal failure (chronic interstitial nephritis) <p>Toxicity NOTE: target therapeutic levels of lithium should be between 0.6 to 0.8 mmol/L Serum lithium concentration >1.5mmol/L</p> <ul style="list-style-type: none"> • GI - anorexia, nausea, diarrhoea • CNS - increasing malaise & confusion, muscle weakness, drowsiness, ataxia • Acute kidney failure <p>Serum lithium concentration >2mmol/L</p> <ul style="list-style-type: none"> • Disorientation, seizure, coma and death 	<p>1st line therapy for bipolar disorder</p> <p>Can be used in pregnancy, although it can be teratogenic</p>	<p>Before commencing: ECG, TFT, bhCG, renal function (eGFR & UEC)</p> <p>Safe for breastfeeding</p> <p>Renally excreted→ dehydration increases lithium concentration</p> <p>Contraindicated in renal failure / cardiovascular complications</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Investigations</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>bHCG</td> <td>Baseline</td> </tr> <tr> <td>Serum lithium levels</td> <td>3 - 6 months</td> </tr> <tr> <td>Renal function (eGFR)</td> <td>Baseline, then every 3 - 6 months</td> </tr> <tr> <td>Thyroid function (TFTs)</td> <td>Baseline, then every 6 - 12 months</td> </tr> <tr> <td>Urea, Electrolytes, Creatinine (UEC)</td> <td>Baseline, then every 6-12 months</td> </tr> <tr> <td>Calcium</td> <td>Baseline then annually</td> </tr> <tr> <td>Weight</td> <td>Baseline then annually</td> </tr> </tbody> </table> <p>Avoid lithium in patients with poor compliance. Intermittent use may worsen natural course of bipolar</p> <p>When lithium is to be discontinued, do so gradually to minimise manic relapse. Decrease dose gradually over a period of 4 weeks and avoid decremental serum level reductions of >0.2mmol/L</p> <p>NOTE: Since lithium has a narrow therapeutic range, it is important to ensure that patients are well hydrated and their kidney function is stable.</p>	Investigations	Frequency	bHCG	Baseline	Serum lithium levels	3 - 6 months	Renal function (eGFR)	Baseline, then every 3 - 6 months	Thyroid function (TFTs)	Baseline, then every 6 - 12 months	Urea, Electrolytes, Creatinine (UEC)	Baseline, then every 6-12 months	Calcium	Baseline then annually	Weight	Baseline then annually
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<p>Sodium Valproate</p> 	<p>Inhibits sodium (voltage-gated), calcium channels (anticonvulsant property)</p> <p>Reduces glutamate</p> <p>Increases potassium channels</p> <p>Increases amount of GABA</p>	<p>"VALPROATE"</p> <ul style="list-style-type: none"> • Vomiting • Alopecia • Liver toxicity • Pancreatitis / Pancytopenia • Retain fat (weight gain) • Oedema • Appetite increase / Agranulocytosis • Teratogenic (NTD) / Tremor • Enzyme inhibitor (cytochrome P450) 	<p>Patient with thyroid dysfunction and/or renal impairment</p> <p>2nd line for bipolar disorder</p> <p>It is also an anticonvulsant used to treat epilepsy</p>	<p>Before commencing: LFT*, bhCG, TFT, eGFR, UEC</p> <p>*Needs LFT monitoring weekly at the beginning</p> <p>Effect 5 – 7 days</p> <p>Can cause thrombocytopenia</p> <p>Excreted in human milk → No adverse developmental or cognitive effects</p> <p>Safe in breastfeeding</p>
<p>Carbamazepine</p> 	<p>Not fully elucidated</p> <p>Binds to sodium (voltage-gated) channels → decrease action potential (anticonvulsant property)</p> <p>Increase dopamine turnover and GABA transmission (reduce manic and depressive symptom)</p>	<p>Gastrointestinal: nausea</p> <p>SIADH: hyponatremia, oedema, blood (aplastic anaemia, agranulocytosis)</p> <p>Teratogenic (1st trimester)</p> <p>Toxic Epidermal Necrolysis (TEN)</p> <p>Steven-Johnson syndrome (SJS)</p> <p>Severe sedation</p> <p>Drug interaction</p> <ul style="list-style-type: none"> • Reduces effects of other drugs (e.g. contraception) 	<p>2nd line for bipolar disorder</p> <p>It is also an anticonvulsant used to treat epilepsy</p>	<p>Not commonly used due to severe sedation and drug interaction</p> 
<p>Lamotrigine</p> 	<p>Not fully elucidated</p> <p>Inhibits sodium currents by blinding to inactive sodium channel → inhibit glutamate release (anticonvulsant and managing bipolar)</p> <p>Binding of sodium channel is similar to local anesthetics → hence used in some neuropathic pain states</p>	<p>Common side effects:</p> <ul style="list-style-type: none"> • Blurry vision, fatigue, headaches and dry mouth • Gastrointestinal disturbances (nausea or vomiting) • Little weight gain or sedation • Exanthema, exfoliative dermatitis <p>Severe side effects:</p> <ul style="list-style-type: none"> • Steven-Johnson syndrome (SJS) - flu like symptoms → red / purple rash → spread and form blisters • Toxic Epidermal Necrolysis (TEN) 	<p>2nd line for bipolar disorder</p> <p>It is also an anticonvulsant used to treat epilepsy</p>	<p>Before commencing: bhCG</p> <p>Known to cause cleft lip when taken during the first trimester.</p> <p>Also decreases folate level → Women should take 5mg folic acid for 4 weeks before conception and during first 12 weeks of pregnancy</p> <p>Not safe for breastfeeding. Side effects include (sedation, feeding difficulties, inadequate weight gain.</p> <p>Need slow titration of dose to limit skin reaction (TEN and SJS)</p> <p>Combined oral contraceptive (COC) induces metabolism of lamotrigine → dose need to be increased (as much as 2-fold)</p> <p>Sodium valproate inhibits metabolism of lamotrigine → increase toxicity → risk of TEN and SJS</p>