Guideline for the management of Lithium toxicity

This guideline should be used as an adjunct to the advice of the Clinical Toxicologist on call as well as the Toxicology Handbook.

- *Acute* lithium overdoses will likely result in gastro-intestinal symptoms only. It takes a significant period of time for lithium levels to equilibrate between blood and brain. Maintaining a high urine output (2 mls/kg/hr) will generally allow sufficient clearance of lithium to prevent CNS toxicity.

- *Chronic* lithium toxicity is more likely to present with prominent neurological features, as there has been sufficient time for CNS accumulation of lithium. Usually there is an inter-current illness or other cause of decreased renal excretion evident. In such cases, the serum [Li] may not be markedly elevated.

- Patients on therapeutic lithium often develop nephrogenic diabetes insipidus, producing large quantities of urine even in the setting of intravascular volume depletion. Patients may require large volumes of oral or intravenous fluids (isotonic or hypotonic) to maintain a serum [Na] in the normal range

- Haemodialysis may be indicated in select cases of lithium toxicity e.g. contraindications to the fluid load required; prolonged absorption or ineffective renal excretion of lithium with persistently elevated serum levels; or in patients with high levels and established neurotoxicity.

- Early notification of the Renal Team of a potential dialysis candidate does not mandate proceeding to dialysis, but may facilitate this occurring subsequently based on the clinical course.

Management of lithium toxicity

- Initial bloods should include a lithium level and UEs along with a clinical assessment of fluid status and signs of established neurotoxicity (confusion, increased tone, tremor, hyperreflexia, clonus). Thyroid function tests and calcium should be checked in patients on chronic lithium therapy.

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- Contact the Toxicology service (through SCGH/RPH switchboard or WA Poisons Information Centre [PIC] – 131326) for acute ingestions > 10g and suspected cases of chronic lithium toxicity

- ***Fluid resuscitation***

    - Initial IV fluid bolus of 1 – 2 litres.

- ***Maintenance fluid***

    - Commence maintenance fluids and titrate to maintain urine output 1.5-2mL/kg/hr

    - Aim for sodium levels of 140-145mmol/L

    - ***Urine output*** must be measured and a fluid balance chart maintained. This will be most efficiently undertaken with an indwelling catheter and hourly measurements, however it is acceptable to measure urine output passed into a commode or bottle in a compliant patient

- ***Lithium Levels***

    - Lithium levels should be checked 6 hourly in all patients being managed with supportive care for lithium toxicity unless advised otherwise by the Toxicology service

- ***Consultation with Renal Medicine***

    - Consultation with Renal Medicine should occur for all patients at high risk of needing dialysis:

        - Lithium level above 4mmol/L with renal impairment or age >60

        - Lithium level above 5mmol/L in any patient

        - Suspected cerebral lithium toxicity in any patient with acute or acute on chronic toxicity