

## **ABSTRACT**

**Context** – Lithium is a cost-effective treatment for bipolar affective disorder in term of its mood stabilizing property. Because of its narrow therapeutic window, monitoring of serum lithium level is essential. A simple and reliable method to tell the dose, the frequency and the mode of release (conventional or slow release) of lithium required for an individual patient, then the time for lithium titration could possibly be speeded up. Zetin (1986) and Terao (1999) generated such equation for prediction, but the accuracy was not satisfactory.

**Objective** –1. Equations formulation for prediction of serum lithium level with various lithium regimens and 2. validation of the accuracy of the equation.

**Design** – This is a retrospective study. In phase one, 260 inpatients were selected. Data of individual inpatient including the gender, age, body weight, body height, renal and thyroid functions of patients was collected from medical record. The dosage, frequency and mode of release of lithium used were also recorded. Equations were generated by a statistical method designed for retaining the interaction between independent variables of individual sample in regression analysis. In phase two, another 33 inpatients were selected and their data collected were used for the validation of the equations formulated. The power of prediction of the equations was defined as percentage of samples with prediction error (difference between actual and predicted value of serum lithium level) less than 0.2 mmol/L.

**Result** – Three equations was generated in phase one study. By using the equations, up to 91% of samples have prediction error less than 0.2 mmol/L, compared with 58% (Terao) and 12% (Zetin) by using equations proposed by earlier workers.

**Conclusion** – The equations generated in the present study are more accurate and useful in clinical setting because up to 91% of patients can attain therapeutic range (0.5 to 1.0 mmol/L) of serum lithium level if the predicted value between 0.7 to 0.8 mmol/L is targeted.