

## 7.2 Percentage of patients taking lithium who receive appropriate monitoring during their inpatient episode

### Purpose

This indicator addresses the effectiveness of processes for ensuring compliance with best practice recommendations for monitoring lithium therapy.

### Background and evidence

Lithium has benefit for both treatment and prophylaxis of bipolar affective disorder and recurrent unipolar depression and is the benchmark when trialling new mood stabilisers.<sup>1</sup> However, lithium has a number of potentially serious adverse effects including hypothyroidism and renal dysfunction. Most side effects of lithium are related to its plasma concentration and the plasma concentration of lithium is dependent on renal function.<sup>1,2</sup> At toxic concentrations, lithium can cause ataxia, diarrhoea, vomiting, coarse tremor, neurological signs (including hemiplegia), disorientation, dysarthria, muscle twitches, impaired consciousness, acute kidney failure and death. Prolonged toxic concentrations may lead to irreversible brain damage.<sup>1-3</sup>

Monitoring for the development of adverse effects in patients taking lithium is recognised as an important component of the overall care of these patients. Guidelines recommend monitoring at baseline and every three to six months throughout lithium treatment.<sup>1-3</sup> International studies have shown lithium monitoring to be suboptimal<sup>4</sup> and, in response to this, a safety alert was issued by the UK National Patient Safety Agency.<sup>5</sup>

### Key definitions

**Patients taking lithium** are defined as those patients, admitted to an inpatient mental health bed for greater than 72 hours, taking lithium for any indication.

**Appropriate monitoring** means that all of the following parameters are measured and recorded:

- renal function;
- thyroid function; and
- lithium plasma concentration.

For patients initiating lithium during the inpatient episode or having initiated lithium within the previous three months, there must be evidence that renal and thyroid function were measured prior to lithium initiation and that plasma lithium concentrations were measured five to seven days after initiation (baseline measurements).

For patients on existing lithium therapy, there must be evidence that monitoring of renal function, thyroid function and plasma lithium concentrations has occurred at least once within the last six months. This may be demonstrated by either:

- measurement of all parameters during the inpatient episode; or
- clear documentation of results obtained within the six months prior to admission.

### Data collection for local use

Please refer to the section *Using the National Quality Use of Medicines Indicators for Australian Hospitals* for guidance on sample selection, sample size, measurement frequency and other considerations.

**Inclusion criteria:** All patients greater than 12 years of age taking lithium during their inpatient episode.

**Exclusion criteria:** Patients with a length of stay less than 72 hours.

**Recommended data sources:** Medical and pharmacy records and pathology results.

The data collection tool for QUM Indicator 7.2 assists data collection and indicator calculation.

## Data collection for inter-hospital comparison

This indicator may be suitable for inter-hospital comparison. In this case, definitions, sampling methods and guidelines for audit and reporting need to be agreed in advance in consultation with the coordinating agency.

## Indicator calculation

$$\frac{\text{Numerator}}{\text{Denominator}} \times 100\%$$

**Numerator** = Number of patients taking lithium who receive appropriate monitoring

**Denominator** = Number of patients taking lithium in sample

## Limitations and interpretation

This indicator requires a number of separate parameters to be monitored in order for monitoring of lithium therapy to be deemed appropriate. It is recommended that the individual components of the indicator be collected to inform post-audit interventions.

This indicator requires monitoring of all parameters at six-monthly intervals as a minimum. It is recognised that some practice guidelines recommend more frequent monitoring of plasma lithium concentrations<sup>2</sup> and that some patients in particular may require more frequent monitoring, for example those being stabilised on lithium or those who have had previous abnormal test results.<sup>1,3</sup>

The indicator recognises that appropriate monitoring may be hospital or community-based, and that relevant parameters should be available across the continuum of care. The indicator investigates whether monitoring occurred, but does not assess whether abnormal results are acted upon appropriately. It is acknowledged that whilst lithium therapy requires ongoing monitoring, this indicator does not assess the continued monitoring of patients post-discharge. It is strongly recommended that results of inpatient monitoring and a plan for continued monitoring be communicated to ongoing care providers and to the patient or carer at discharge.

## Further information

Medication Safety Self Assessment in Australian Hospitals<sup>6</sup> (MSSA) can help identify potential strategies for improvement with this and other indicators. MSSA encourages development of robust systems for safe prescribing, dispensing, administration and monitoring of medicines. MSSA is available at [www.cec.health.nsw.gov.au](http://www.cec.health.nsw.gov.au)

This indicator can be used to assist hospitals in meeting the National Safety and Quality Health Service Standard 1 [items 1.2.1, 1.2.2, 1.5.2, 1.6.1, 1.6.2, 1.7.2] and Standard 4 [items 4.2.1, 4.4.2, 4.5.1, 4.5.2, 4.7.2, 4.11.1].<sup>7</sup>

## References

1. Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines Team for Bipolar Disorder. Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for the treatment of bipolar disorder. *Aust NZ J Psych* 2004; 38: 280–305.
2. Taylor D, Paton C and Kapur S. *The Maudsley Prescribing Guidelines in Psychiatry*, 11th Edn. Wiley-Blackman, 2012.
3. eTG complete [Internet]. Melbourne: Therapeutic Guidelines Ltd; 2013 Feb.
4. Collins N, Barnes T, Shingleton-Smith A, et al. Standards of lithium monitoring in mental health trusts in the UK. *BMC Psych* 2010; 10: 80.
5. Patient Safety Alert: Safer lithium therapy. National Patient Safety Agency, 2009.
6. Medication Safety Self Assessment for Australian Hospitals: Institute for Safe Medication Practices USA (Adapted for Australian use by NSW Therapeutic Advisory Group and the Clinical Excellence Commission), 2007.
7. Australian Commission on Safety and Quality in Health Care. National Safety and Quality Health Service Standards. Sydney, ACSQHC, 2012.