

Lithium therapy - from monitoring to shared care

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Abstract

Lithium is a mood stabiliser that is generally regarded as 'gold standard' for the treatment of bipolar affective disorder. However, lithium has a narrow therapeutic index. This necessitates regular testing of lithium levels as well as of renal and thyroid function, which can be affected by chronic lithium use. An audit was conducted by the Bedfordshire Community Mental Health Team (BCMHT) to investigate the monitoring of lithium therapy. Blood tests (for lithium levels, renal function and thyroid function) were conducted more infrequently than is currently recommended. However, there was also some evidence for alternative explanations for the apparent lack of monitoring, such as the fact that blood tests were now being conducted by GPs rather than psychiatrists. Lithium therapy falls into the remit of shared care: the responsibility for the management of patients is shared between hospital specialists and GPs. One tool to improve communication between the various teams involved in patient care is the shared-care card.

Key words: lithium, bipolar affective disorder, drug monitoring, shared-care.

Background

Lithium is the 'gold-standard' mood stabiliser for the treatment of bipolar affective disorder. However, strict monitoring is required, both of lithium levels and of other biochemical markers such as renal function (urea and creatinine) and thyroid function tests. This is because lithium has a narrow therapeutic index: too high a level leads to toxicity, while too low a level will not be effective.

Current recommendations are that lithium levels are checked every three months and lithium dosing adjusted accordingly, to maintain a serum lithium concentration of 0.4 to 1.0 mmol/l. Note that the lower end of the treatment range is preferable in the context of maintenance therapy and in the treatment of elderly patients. In addition, both renal function and thyroid function tests should be performed every six months.

In terms of renal effects, the most common association with lithium is nephrogenic diabetes insipidus, which typically presents as polyuria and polydipsia and is due to a failure of the kidneys to respond to antidiuretic hormone (ADH), which controls water re-absorption in the collecting ducts. Hypothyroidism is the most frequent endocrine implication of long-term lithium use and appears to be primarily due to inhibition of the release of thyroid hormones (T3 and T4).

Lithium monitoring in practice

The clear recommendations for monitoring blood tests in patients on lithium therapy mean that, at least in theory, monitoring should be relatively straightforward to implement. However, an audit conducted by the Bedfordshire Community Mental Health Team (BCMHT) provides an illustration of some key areas of difficulty with the practicalities of lithium monitoring. Details of the methods and results of this audit are outlined below.

Methods

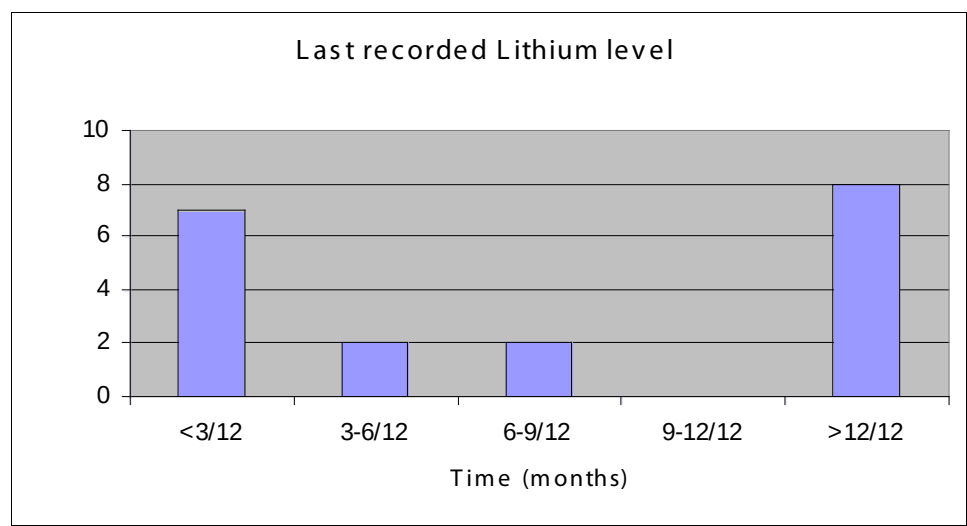
The target population was patients being treated by a community mental health team (the BCMHT) with a catchment area of 60,000 population. A database of all patients attending outpatient

psychiatric appointments at Bedford Hospital was used to identify patients for inclusion in the audit. At the time of the audit, there were 69 patients with bipolar affective disorder out of a total of 500 patients with any psychiatric disorder being treated by the BCMHT. Of these 69 patients, 19 were receiving lithium therapy. For each of the 19 patients, the paper notes were reviewed and all monitoring blood tests, i.e. lithium blood levels, renal function tests and thyroid function tests, carried out over a two-year period (January 2006 to January 2008) were recorded.

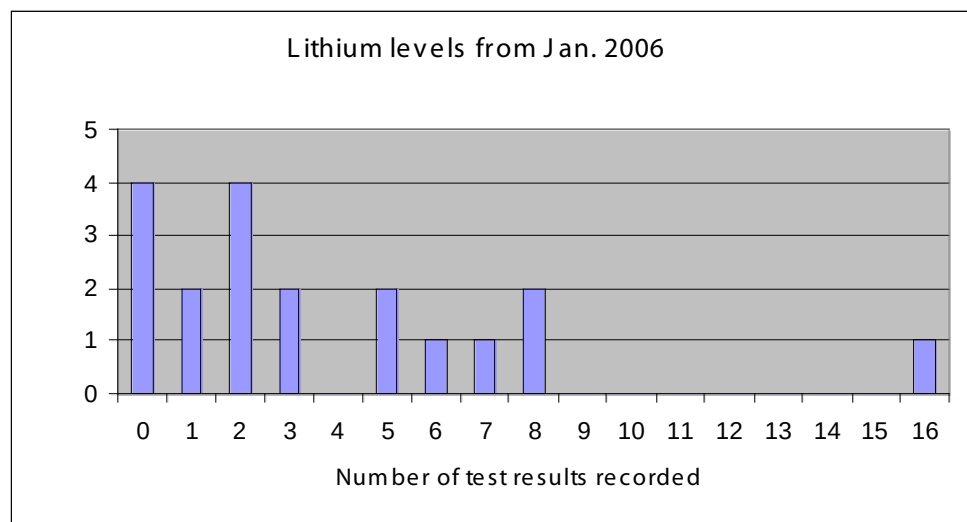
Results

a) Recording of lithium levels

Graph 1



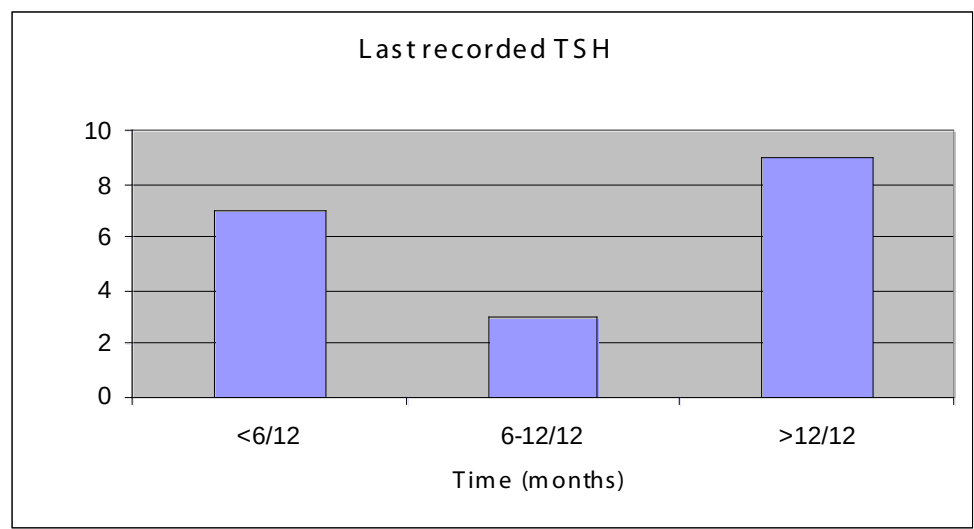
Graph 2



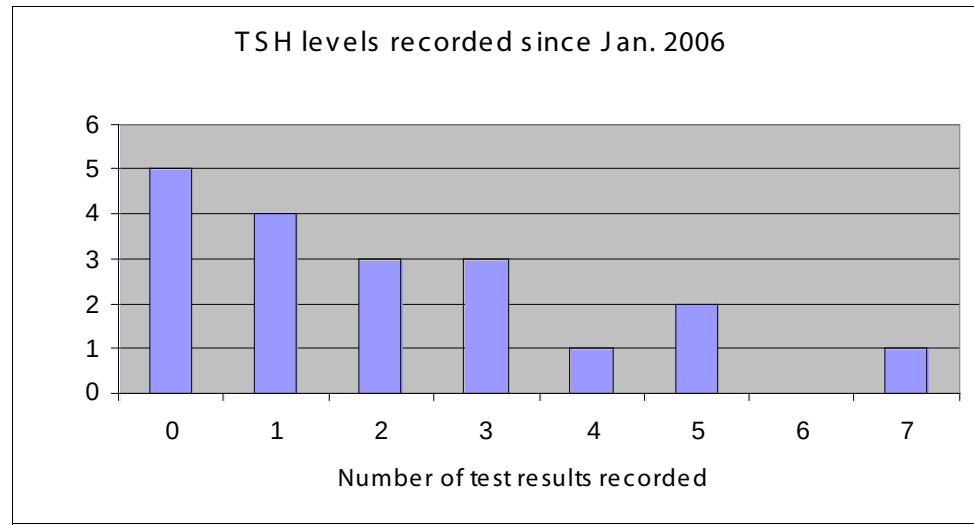
The target was that all patients should have a recorded lithium level within the last three months and that all patients should have eight recorded lithium levels over a two-year period, starting in January 2006, in line with recommendations for three-monthly lithium monitoring. Graphs 1 and 2 clearly illustrate the failure to meet these targets. Only 7/19 patients had recorded lithium levels within the last three months, and only 3/19 patients had eight or more recorded lithium levels over the two-year period.

b) Recording of thyroid function tests

Graph 3



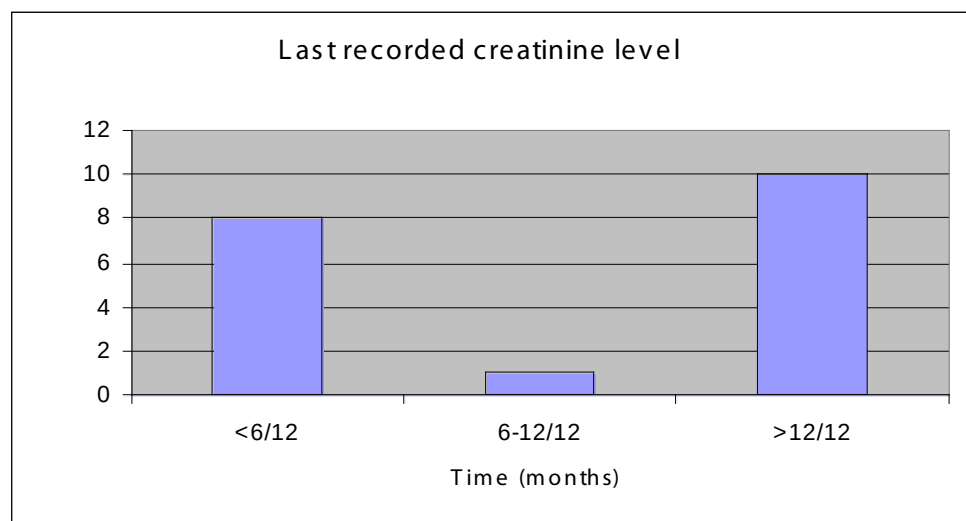
Graph 4



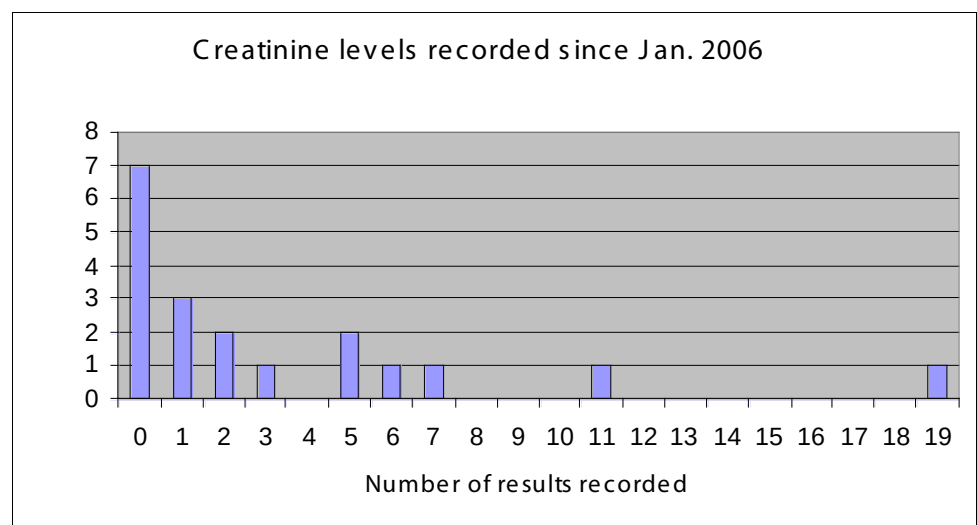
The target was that all patients should have recorded thyroid function tests within the last six months and that all patients should have four recorded thyroid function tests over a two-year period starting in January 2006, in line with recommendations for six-monthly monitoring of thyroid function tests. As with the monitoring of lithium levels, targets were not met. Only 7/19 patients had recorded thyroid function tests within the last six months (graph 3) and only 4/19 patients had four or more recorded thyroid function tests over the two-year period.

c) Recording of renal function tests

Graph 5



Graph 6

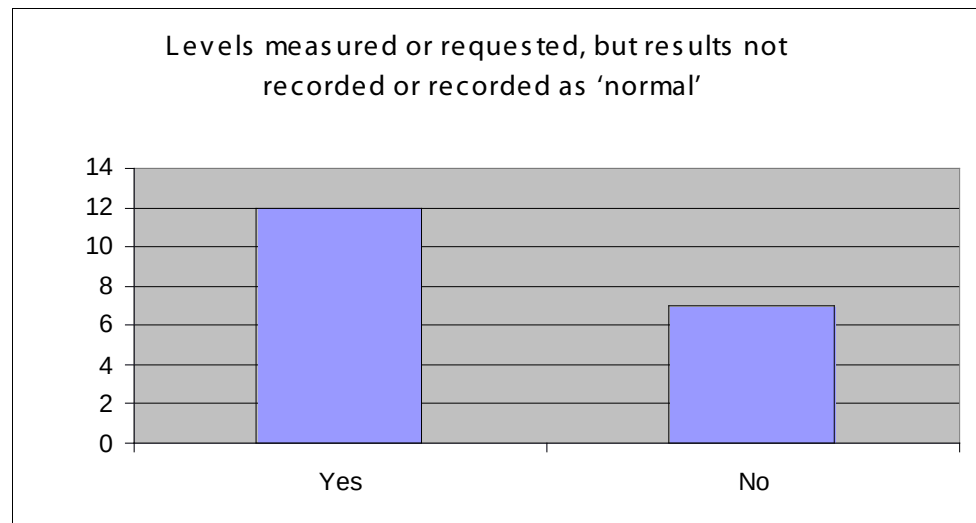


The target was that all patients should have recorded renal function tests within the last six months and that all patients should have four recorded renal function tests over a two-year period starting in January 2006, in line with recommendations for six-monthly monitoring of renal function tests. Once again these targets were not met. Only 8/19 patients had recorded renal function tests within the last six months and only 6/19 patients had four or more recorded renal function tests over the two-year period.

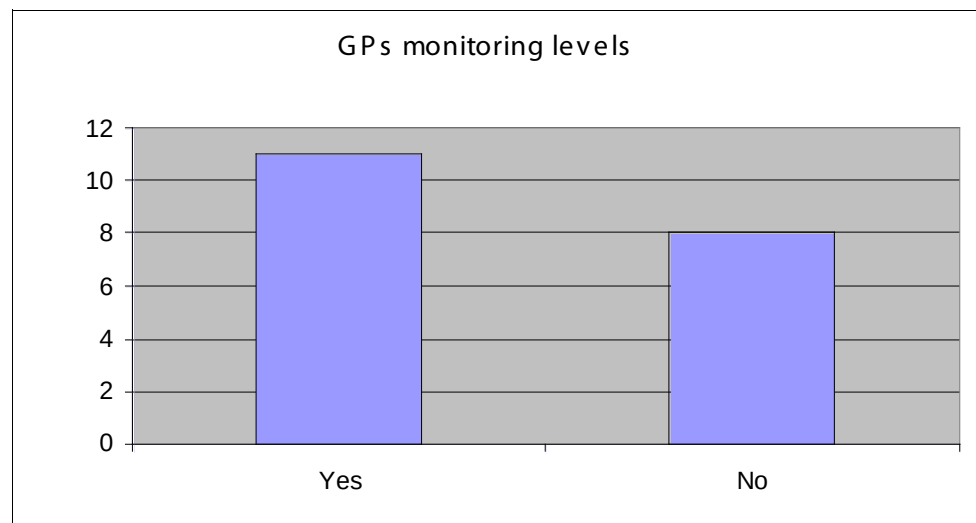
Interpretation

The obvious conclusion is that all aspects of lithium monitoring were consistently carried out more infrequently than is currently recommended for patients on long-term lithium therapy. However, there are alternative explanations for the apparent failure to carry out monitoring. For example, blood tests may have been performed but the results may either never have been documented in the notes or may have simply been recorded as normal rather than the actual level being stated in the notes. Also, it is possible that doctors other than psychiatrists (i.e. general practitioners) may have taken over responsibility for lithium monitoring.

Graph 7



Graph 8



The above graphs provide support for ‘alternative explanations’ accounting, at least in part, for the apparent lack of recorded lithium blood-level results. According to graph 7, 12/19 patients had lithium levels measured but the results were then not adequately documented in the notes. According to graph 8, for 11/19 patients the psychiatrist had asked the GP to take over the monitoring of lithium levels.

Taking all the results together it would appear that while lithium monitoring was indeed carried out less frequently than recommended, it was also under-reported. This highlights the need for both better documentation in the notes and improved communication between psychiatrists and GPs.

Moving forward – the need for coordinated shared care

Lithium monitoring falls into the remit of shared-care: the responsibility for the management of patients is shared between hospital specialists and community GPs. While psychiatrists continue to review patients with bipolar affective disorder being treated with lithium therapy, GPs often take on the monitoring of lithium levels. However, as the audit indicated, when this happens, psychiatrists are not always aware of the results of blood tests arranged by GPs. The narrow therapeutic index of lithium has already been discussed. This implies that there is a high potential either for under-treatment or for toxicity if the blood levels are not within the recommended range. Unless the

psychiatrist responsible for adjusting the dose of the lithium is aware of the blood level results and also of the results of the renal and thyroid function tests, patient safety could be compromised. Good communication between the psychiatrist and the GP is essential if risks to the patient are to be minimised.

One tool to facilitate communication between GPs and hospital specialists is the shared-care card. This is a card for recording test results, which the patient takes both to the GP and to hospital outpatient appointments. The results of any tests carried out by the GP can subsequently be viewed and documented by the hospital doctors. The use of shared-care cards is not confined to psychiatry. For instance, they are given to rheumatology patients on disease modifying drugs (DMARDs) such as methotrexate and gold, which, like lithium, have a narrow therapeutic index and can lead to toxicity.

A lithium pack, including a shared-care card and psycho-education material, has now been implemented by the Department of Health for patients on long-term lithium therapy. However, prior to this development, the BCMHT had already introduced a shared-care card at a local level and a sample of this card is included for reference.

GP Comment

What have I learned from this paper?

Because lithium has a narrow therapeutic index, regular blood monitoring is necessary, not only to check that the lithium blood level is in the right range but also to ensure that renal and thyroid function are not compromised.

Good communication between the GP and the hospital psychiatrist is essential if the results of blood monitoring are to be used fully for safe and effective lithium treatment. Communication can be facilitated by the use of a shared-care card, carried by the patient and taken to appointments both with the psychiatrist and with the GP.

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References

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2. Agius M, Wear H, Zaman R. Development of a shared care system for managing lithium therapy. Final Program 21st ECNP conference Barcelona p113; 2008.