

DATE:	5 February 2024
TO:	All Zones: All healthcare professionals and providers
FROM:	Clinical Biochemistry, Alberta Precision Laboratories (APL)
RE:	Therapeutic Target Range and Reporting Changes for Lithium

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Key Message

- Effective February 15, 2024, changes to serum lithium therapeutic drug monitoring reporting will occur. This includes updated therapeutic target range, critical result value, and reporting comments (see Appendix).

Why this is important

- Recent literature suggests that specific therapeutic target ranges for older adults will minimize adverse events associated with lithium treatment of bipolar disorder.
 - Age stratified therapeutic target ranges and an updated critical value will be implemented to better align with literature recommendations and medical laboratory practice across Canada.
- Therapeutic target ranges will move into the Connect Care reference interval field.
 - They will no longer be in *comment text format*
 - This enables abnormal result flags to be appended for lithium concentrations that fall outside of the therapeutic target range limits. Previously, results outside of the therapeutic target range that were less than the critical result value would not be flagged as abnormal.
- The Poison and Drug Information Service (PADIS) contact information will be appended to high and critical lithium values within the result comment field.

Action Required

- Be aware of changes to the therapeutic target range and critical result value for lithium therapeutic drug monitoring orders. Refer to the [APL Test Directory](#) for additional information.
- Some patients may reclassify on the laboratory report as high, depending on their age or current serum lithium concentration. Final determination of the patient's clinical status remains with the ordering practitioner in these cases.

Questions/Concerns

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This bulletin has been reviewed and approved by

- Dr. Kareena Schnabl, Section Chief, Clinical Biochemistry, APL
- Dr. Allison Venner, Associate Section Chief, Clinical Biochemistry, APL
- Dr. Michael Mengel, Medical Director, North Sector, APL
- Dr. Paul Klonowski, Associate Medical Director, South Sector, APL



Appendix

Table 1: NEW therapeutic target ranges and critical values for serum lithium

Age (years)	Lithium Therapeutic Target Range (mmol/L)	Critical Value (mmol/L)
≤ 59	0.60 – 1.20	> 1.50
60-79	0.40 – 0.80	> 1.50
≥ 80	0.40 – 0.70	> 1.50

- If needed, consult Poison and Drug Information Service (PADIS) at 1-800-332-1414 for the clinical management of possible drug toxicity.

Comment 1: PREVIOUS therapeutic target range for serum lithium in *comment text format*

Acute Mania Therapy: 1.00 - 1.50 mmol/L

Bipolar Maintenance: 0.60 - 1.20 mmol/L

Depression: 0.30 - 0.60 mmol/L

Previous comment based therapeutic target ranges listed here for comparison purposes only. The comment will be removed simultaneously with implementation of new lithium therapeutic target ranges.

Comment 2: PREVIOUS critical value

Critical Result: > 2.00 mmol/L

Previous critical value is listed here for comparison purposes only. It will be updated to value in Table 1 with implementation of new lithium therapeutic target ranges.

References

Fung AWS, Shulman KI, Konforte D, Vandenberghe H, Stemp J, Yuan VR, Yip PM, Fu L. Age-Stratified Lithium Therapeutic Ranges for Older Adults with Bipolar Disorder - from Awareness to an Action Plan. *EJIFCC*. 2023 Jul 10;34(2):153-166.

Shulman KI, Almeida OP, Herrmann N, Schaffer A, Strejilevich SA, Paternoster C, Amodeo S, Dols A, Sajatovic M. Delphi survey of maintenance lithium treatment in older adults with bipolar disorder: An ISBD task force report. *Bipolar Disord*. 2019 Mar;21(2):117-123.

Shulman KI, Sajatovic M, Dols A. Laboratories should provide a separate therapeutic range for serum lithium levels in maintenance treatment of older adults with bipolar disorder (OABD). *Bipolar Disord*. 2019 May;21(3):190-191.

Effective September 1, 2023, APL has become the sole provider of all public lab services in Alberta. As a result, community lab services formally provided by DynaLIFE Medical Labs will become the responsibility of Alberta Precision Labs (APL). This change impacts all zones.