

# Safety Monitoring among Patients Who Initiated Lithium Use in Taiwan

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## INTRODUCTION

- Lithium has been used commonly against psychiatric diseases for decades.
- Quarterly monitoring of serum lithium, as well as biannual examination of renal and thyroid function, are recommended to patients who are prescribed lithium.
- The potential lithium-related hypercalcemia and hyperparathyroidism further enforce the need of regular check-out of serum calcium and parathyroid function.
- This study aimed to investigate the evaluation rate of serum lithium, serum calcium, renal, thyroid and parathyroid functions among patients who initiated their lithium therapy.

## METHODS

- Study design: Retrospective cohort study
- Data source: Taiwan's National Health Insurance research database (NHIRD)
- Study subjects: 6,378 patients who initiated lithium between 2001 and 2011 were identified.
- Exclusion criteria: Less than 365 days of beneficiary coverage before and after lithium initiation
- Descriptive statistics: Evaluation rates of serum lithium, serum calcium, renal, thyroid and parathyroid functions in different periods to lithium initiation were retrieved.
- Subgroup analysis: valuation rates by sex, age, prescribing physician’s specialty, accreditation level and region of attending hospitals in prior 30 days and posterior 180 days of lithium initiation were further examined.

## RESULTS

- Approximately 40% and 29% of these lithium prescriptions were prescribed in metropolitan hospitals and medical centers.
- In posterior 30 days of lithium initiation, monitoring of serum lithium, serum calcium, renal, thyroid and parathyroid function were conducted in 407 (10.91%), 110 (2.95%), 530 (14.21%), 821 (12.87%) and 1 (0.02%) patients, respectively.
- Higher evaluation rates of serum calcium, renal and thyroid function were found in prior 30 days when comparing to those in posterior 30 days.
- Regarding parathyroid function examination, none was found in posterior 90 days, and only one study subject were evaluated in prior 30 days, 91-180 days and 181-365 days. (Thus, its evaluation rates were not shown in bar diagrams.)
- In posterior 180 days of lithium initiation, renal function examination was conducted in no more than one-third patients of each subgroup, while serum lithium and thyroid function examination were conducted in under 20% and 10% patients.
- Renal function monitoring was arranged most frequently in each subgroup after lithium initiation.
- Psychiatrists monitored serum lithium more often than other physicians.
- Physicians from clinics underwent evaluations less frequently.

## CONCLUSIONS

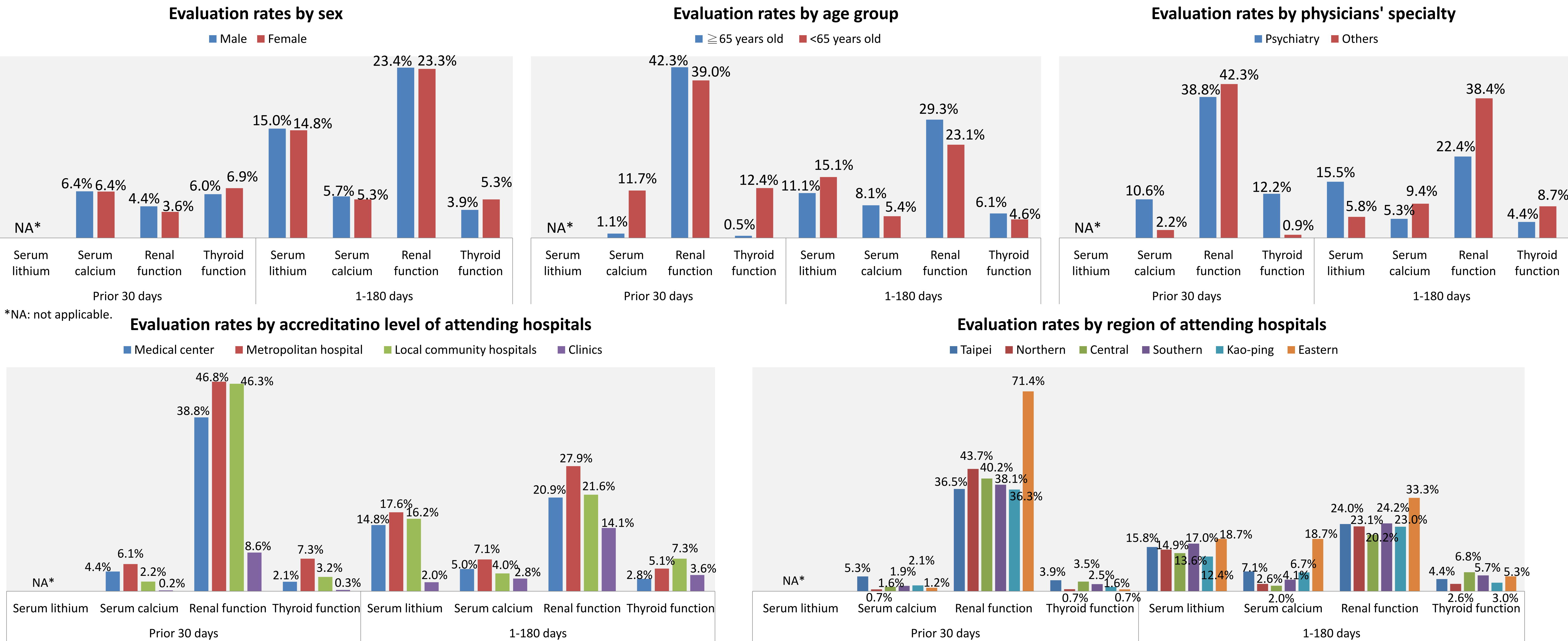
- **This population-based study disclosed insufficient safety management of lithium therapy in Taiwan.**
- **The evaluation rates of serum calcium, renal and thyroid functions during lithium therapy were lower than those at baseline.**
- **Parathyroid function of lithium initiators was scarcely monitored.**

Table 1. Baseline characteristics

	Initiators of lithium	
	n=6,378	
	n	%
Gender, male	2,775	43.51
Age (year), mean ± SD	39.27±15.05	
0-17	318	4.99
18-29	1,643	25.76
30-64	4,003	62.76
≥ 65	414	6.49
Diagnosis		
Depressive disorders	2,903	45.52
Schizophrenia	1,576	24.71
Anxiety disorders	2,154	33.77
Bipolar disorder	2,523	39.56
Provider characteristics		
Specialty		
Psychiatry	5,601	87.82
Others	777	12.18
Accreditation level		
Medical center	1,874	29.38
Metropolitan hospital	2,552	40.01
Local community hospital	1,095	17.17
Clinics	857	13.44
Region (Branch)		
Taipei	2,204	34.56
Northern	570	8.94
Central	1,158	18.16
Southern	1,038	16.27
Kao-ping	1,195	18.74
Eastern	213	3.34
Duration of Li use (day), Q1-Q3 (median)	7-624 (63)	
Follow-up (day), Q1-Q3 (median)	378 -2,194 (1,002)	

Table 2. Evaluation rates of serum lithium, serum calcium, renal, thyroid and parathyroid function prior and posterior to lithium initiation

	Prior 30 days		1-30 days		31-90 days		91-180 days		181-365 days	
	n=6,378		n=3,730		n=2,892		n=2,387		n=1,963	
	n	%	n	%	n	%	n	%	n	%
Serum lithium	---	---	407	10.91	399	13.80	356	14.91	395	20.12
Serum calcium	817	12.81	110	2.95	111	3.84	131	5.49	165	8.41
Renal function	2,501	39.21	530	14.21	554	19.16	557	23.33	688	35.05
Thyroid function	821	12.87	106	2.84	110	3.80	111	4.65	172	8.76
Parathyroid function	1	0.02	0	0	0	0	1	0.04	1	0.05



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