

# ISMP Canada Safety Bulletin

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## Express Levothyroxine Doses in Micrograms not Milligrams

*Consistently express levothyroxine doses in micrograms (mcg), not milligrams (mg), in all written or computer-generated prescriptions and health records, pharmacy systems, medication administration records, provincial/territorial drug databases, drug information systems, and patient materials.*

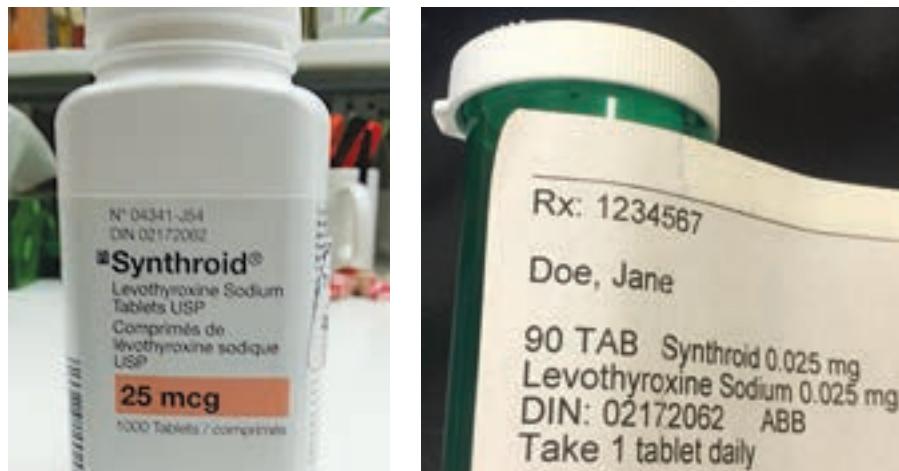
A seemingly innocuous medication, levothyroxine, continues to be highlighted in medication incidents reported to ISMP Canada. The last ISMP Canada Safety Bulletin shared important learning from the preventable death of an individual on long-term levothyroxine therapy, whose excessive dose over several years may have contributed to her death.<sup>1</sup> The emphasis of that bulletin was on establishing standardized processes to ensure that patients taking levothyroxine are regularly monitored and that test

results are communicated and acted upon in a timely manner. The current bulletin focuses on a different aspect of this medication, as identified in an analysis of recent incidents: the expression of medication strength and the error-prone process of converting between different units of measure.

Multiple cases of errors and near misses involving levothyroxine dose conversions from milligrams (mg) to micrograms (mcg) and vice versa have been reported to ISMP Canada and in the literature.<sup>2</sup> Canadian manufacturer labels express levothyroxine doses in micrograms (mcg) only. However, throughout the medication-use process (e.g., prescribing, dispensing, and administration), levothyroxine doses may be expressed in micrograms (mcg) or in milligrams (mg). As a result, patients and healthcare providers may need to convert doses from milligrams (mg) to micrograms (mcg), or vice versa,

**Figure 1.**

Example of a levothyroxine strength expressed in micrograms (mcg) on the manufacturer label (far left), compared with dose expressed in milligrams (mg) on a typical pharmacy label.



to match the prescribed dose to a particular product. Errors in the calculations required to convert between units are contributing to these errors and near misses. A common calculation error occurs when converting between 0.025 mg and 25 mcg, causing in a 10-fold error in dosing. The resultant dose, sometimes 250 mcg rather than 25 mcg, is considered a reasonable dose for some patients and, as such, does not raise a red flag for most practitioners.

## Recommendation

It is strongly recommended that levothyroxine doses be expressed consistently in micrograms (mcg), not milligrams (mg), in all written or computer-generated prescriptions and health records, pharmacy systems, medication administration records, provincial/territorial drug databases, drug information systems, and patient materials.<sup>2</sup> Using microgram units

reduces the need for decimals (which can lead to errors), allows the dose to correspond directly to the manufacturer's label (avoiding the need for conversion), and will standardize how levothyroxine information is communicated.

## References

1. Gaps in medication monitoring may contribute to death. ISMP Can Saf Bull 2017 [cited 2017 Mar 2];17(2):1-5. Available from: <https://www.ismp-canada.org/download/safetyBulletins/2017/ISMPCSB2017-02-GapsMedicationMonitoring.pdf>
2. Clemens K, Van Uum C. A pituitary mass as a consequence of a decimal error in levothyroxine dose. CMAJ. 2012;184(2):210.
3. Kelly K, Vaida AJ. A point about levothyroxine. Pharm Times. 2004 Apr 1 [cited 2017 Jan 10]. Available from: <http://www.pharmacytimes.com/publications/issue/2004/2004-04/2004-04-7811>

## Caution: M-Eslon Now Also Available as an Immediate-Release Product

For over 2 decades, healthcare practitioners have associated the name M-Eslon with an extended-release formulation of morphine. With the introduction of M-Eslon IR, an immediate-release morphine product, that association may present a danger to patients. The shared name was reported to ISMP Canada as a medication safety concern. There is a potential for a mix-up between the 2 products, especially since both M-Eslon and M-Eslon IR are available in 10 mg and 30 mg strengths.<sup>1,2</sup> Furthermore, both products are available in capsule form, although the capsule colours differ between formulations of the overlapping strengths.<sup>1,2</sup>

ISMP Canada has been in contact with the manufacturer to share these concerns. Ethypharm Canada indicated that practitioners' concerns have been heard, and the company is in the process of renaming the immediate-release product. M-Eslon IR will continue to be available on the market until the name change is approved. Meanwhile, practitioners are encouraged to confirm the intended formulation with patients and prescribers and to report any mix-ups to ISMP Canada.

### References

1. M-Eslon [product monograph]. Montreal (QC): Ethypharm Inc.; 2011 Jul 20 [revised 2014 Jul 29; cited 2016 Dec 15]. Available from: <http://www.ethypharm.fr/wp-content/uploads/2016/09/Product-Monograph-M-Esolon.pdf>
2. M-Eslon IR [prescribing information]. Montreal (QC): Ethypharm Inc.; [revised 2015 Jul 29; accessed 2016 Dec 15]. Available from: <http://www.ethypharm.fr/wp-content/uploads/2016/09/m131-m-eslon-ir-pi-8Dec2015-clean.pdf>

*This segment of the bulletin describes a recent SafeMedicationUse.ca publication from ISMP Canada's Consumer Program.*

February 2017 - Newsletter:  
**Some Medications Don't Mix**

SafeMedicationUse.ca received a report of long-term adverse effects resulting from a drug interaction between citalopram and tramadol. The interaction caused psychological and physical symptoms and left the patient unable to care for herself, even after the interaction had been addressed. The following tips for practitioners are presented to support patients' efforts to prevent drug interactions and minimize the risk of harm.

**Tips for Practitioners:**

- Recommend to patients that they use one pharmacy for all their prescription and nonprescription needs. Use of a single pharmacy will support the detection of drug interactions.
- Consider a drug interaction as a possible cause of a patient's new symptoms or sudden change in health, and investigate accordingly.
- Conduct regular medication reviews (including nonprescription and natural health products) with your patients to identify potential drug interactions.
- Help patients to keep their medication lists up to date for sharing with all of their healthcare providers.

For more information, read the full newsletter:

[https://safemedicationuse.ca/newsletter/newsletter\\_DrugInteractions.html](https://safemedicationuse.ca/newsletter/newsletter_DrugInteractions.html)

Consumers Can Help Prevent  
Harmful Medication Incidents



**SafeMedicationUse.ca**

## Call for Expert Reviewers

ISMP Canada Safety Bulletins undergo rigorous multidisciplinary review. Expert review is a critical part of this process and supports the development of recommendations that are relevant and useful for readers.

ISMP Canada is seeking expert reviewers from across the country and from all practice settings to lend their expertise to the bulletins. Reviewers can be experts in specific areas (e.g., technology, clinical disciplines) or front-line practitioners who work through specific medication-related processes (e.g., medication reconciliation) on a daily basis. The expected time commitment is roughly 1–2 hours per publication and you will be called upon only when bulletins with relevant topics are being developed. All expert reviewers will be acknowledged in the published ISMP Canada Safety Bulletin.

Please contact Dorothy Tscheng at [dtscheng@ismp-canada.org](mailto:dtscheng@ismp-canada.org) for more information or to lend your expertise. Thank you for considering this opportunity!



The Canadian Medication Incident Reporting and Prevention System (CMIRPS) is a collaborative pan-Canadian program of Health Canada, the Canadian Institute for Health Information (CIHI), the Institute for Safe Medication Practices Canada (ISMP Canada) and the Canadian Patient Safety Institute (CPSI). The goal of CMIRPS is to reduce and prevent harmful medication incidents in Canada.



The Healthcare Insurance Reciprocal of Canada (HIROC) provides support for the bulletin and is a member owned expert provider of professional and general liability coverage and risk management support.



The Institute for Safe Medication Practices Canada (ISMP Canada) is an independent national not-for-profit organization committed to the advancement of medication safety in all healthcare settings. ISMP Canada's mandate includes analyzing medication incidents, making recommendations for the prevention of harmful medication incidents, and facilitating quality improvement initiatives.

## Report Medication Incidents

(Including near misses)

**Online:** [www.ismp-canada.org/err\\_index.htm](http://www.ismp-canada.org/err_index.htm)

**Phone:** 1-866-544-7672

ISMP Canada strives to ensure confidentiality and security of information received, and respects the wishes of the reporter as to the level of detail to be included in publications. Medication Safety bulletins contribute to Global Patient Safety Alerts.

## Stay Informed

To receive ISMP Canada Safety Bulletins and Newsletters visit:

[www.ismp-canada.org/stayinformed/](http://www.ismp-canada.org/stayinformed/)

This bulletin shares information about safe medication practices, is noncommercial, and is therefore exempt from Canadian anti-spam legislation.

## Contact Us

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